# FACTORS THAT INFLUENCE TEACHER TURNOVER IN TEXAS: CORRELATIONS WITH VARIABLES FROM THE ACADEMIC EXCELLENCE INDICATOR SYSTEM FOR THE YEAR 1998-99

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The teacher shortage problem is a national and state concern. In 1998, the Texas State Board of Education Certification reported that school districts in Texas had to hire teachers to fill over 63,000 vacancies. Teacher resignations, other than retirement, contributed to over 46,000 teachers who left the profession about 19 % of the state's total teacher workforce. A significant number of Texas teachers left the profession in the first five years. The National Commission on Teaching and America's Future (1996) called the attrition of new teachers a chronic problem for American schools.

Reducing the teacher shortage in Texas must begin with reducing the teacher turnover rate. Most studies concerning teacher attrition or turnover either address salary, or working conditions. Many of the studies deal with affective and subjective data regarding teacher turnover. The studies on teacher turnover often do not address quantifiable data collected uniformly across districts. Few studies address a comprehensive set of quantitative data to determine the variables associated with teacher turnover. This study addressed teacher turnover through quantitative research of data from the Texas Academic Excellence Indicator System (AEIS) with multiple analysis to provide insights to teacher turnover conditions and trends.

The population for the study included all 1042 Texas school districts, and 61 Charter schools. The Academic Excellence Indicator System (AEIS) was used to

determine the variables and supply data for the study. The study addressed only district data not individual school or campus data. The data captured for this dissertation were analyzed using descriptive statistics, correlational methods, and regression tools of research.

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# CHAPTER 1

## INTRODUCTION

School districts across the United States are struggling to fill teaching vacancies. In Texas, and in the United States, the strongest factors cited as affecting the supply and demand of teachers are increasing school enrollments, state mandates involving class size, teacher certification requirements, accountability, early retirements, teacher turnover, and competitive salary. In 1996, the National Center for Education Statistics (NCES) estimated that the total K-12 enrollment will grow about 10 % from 49.8 million in 1994 to 54.6 million by 2006. Teacher retirements and student enrollment increases will augment the need for more new teachers over the next 11 years. According to data published by the National Education Agency (2000), more than a million veteran teachers are nearing retirement. The number of newly hired public school teachers needed in the next 11 years from 1998-1999 to 2008-2009 will be 2.4 million teachers (National Center for Education Statistics, 1999). This projection jumps to 2.7 million when researchers factor in declining student/teacher ratios based on nationwide class size reduction efforts. Between urban and rural districts with high poverty rates, more than 700,000 new teachers will be needed in the next 10 years. The teacher shortage problem has become a national concern, and the situation is not expected to improve in the near future. Solutions to solve the teacher shortage problem need to be developed or school districts in the United States will be unable to fill classrooms with certified teachers in the 21st Century.

In his 1997 State of the Union Address, President Clinton (1997) issued a "Call to Action" that included, as a priority, improving the quality of teachers in every American classroom. President Clinton's speech reflected a growing concern over the condition of education and the nation's need for excellent teachers. All of the nation's educational systems must provide our children with the knowledge, information, and skills needed to compete in a complex international marketplace. Good teachers are the hallmark of such educational systems; they are integral to children's intellectual and social development. In his speech, President Clinton challenged all Americans to provide talented, dedicated, well-prepared teachers in every classroom across the country. With the increasing complexity of today's technological society, President Clinton emphasized that it is vital that the nation's children have well-prepared teachers who know their subjects and know how to teach effectively. In April 1997 Richard Riley, Secretary of the United States Department of Education, held a nationwide satellite teleconference to address the issue and to solicit input regarding the preparation, selection, and retention of teachers from citizens, policymakers, and educators throughout the nation (Winters, 1997). The message was clear that the United States must be able to recruit, hire, and keep qualified teachers in the profession. With the President's call for the most highly qualified teachers to fill America's classrooms, the teacher shortage problem would appear to be exacerbated. Keeping quality teachers in America's classrooms could be one solution for addressing the teacher shortage problem in the United States.

An historic turnover in the teaching profession is on the way (National Education Agency, 2000). The National Commission on Teaching and America's Future (1996) called the attrition and turnover of new teachers a chronic problem for American schools.

However, teacher turnover is not a new problem for education. McGuinn (1957) reported over 40 years ago that 40% of the school board presidents in one study listed teacher turnover as the most serious problem facing public schools. In fact, throughout the 1960s and early 1970s, teacher turnover rates produced critical teacher shortages (Dworkin, 1987).

In 1998, the Texas State Board of Educator Certification (SBEC) reported that school districts in Texas had to hire teachers to fill over 63,000 vacancies (Texas Center for Educational Research, 2000). Approximately 5,700 vacancies were due to increasing student enrollment, but most of the vacancies resulted from teachers retiring or resigning. Teacher resignations accounted for 46,000 teachers who left the profession, approximately 19% of the state's total teacher workforce. It was reported that a significant number of Texas teachers left the profession in the first five years of their teaching career. According to the research by the Texas Center for Educational Research, teacher retirements and resignations have been the major contributors to the 63,00 vacancies in Texas school districts.

In the United States Department of Education's Baccalaureate and Beyond Study (Boser, 2000), researchers surveyed 10,080 students who had completed bachelor's degrees in 1992-1993 and conducted a follow-up of those same students in 1993-1994 and 1996-1997. The data indicated that nearly one out of five students, about 19%, who graduated in 1992-1993 and started teaching in public schools by 1993-1994 had left the classroom by 1996-1997. Ponessa (1996) reported that of the 81,000 teachers hired in North Carolina between 1978 and 1996, one-third or 33% had left the profession by the

end of the fifth year. High teacher turnover in the first five years of teaching has been a major contributor to the teacher shortage problem (Boser, 2000).

Teacher attrition and turnover are major problems facing the nation and the state of Texas. According to Boe, Bobbitt, and Cook (1993), teacher attrition is a component of teacher turnover (i.e., changes in teacher status from year to year). Teacher turnover may include teachers who exit the profession, but it may also include teachers who change assignments (i.e., classroom to central office or administration) or school districts. The rates of turnover often depend on this definition. Numerous studies focus on teacher attrition, which can be defined as those teachers leaving the profession completely; whereas, teacher turnover is defined as a teacher who does not return to the same district in a teaching capacity in the next calendar year (Texas Education Agency, 1999a). The focus of this study is on the issue of teacher turnover rather than the issue of teacher attrition. However, both teacher attrition and teacher turnover are major contributors to the teacher shortage issue facing the nation and Texas schools. Teacher attrition and turnover are the biggest issues contributing to the demand for additional teachers in the United States (Author Unkown, 1995).

High teacher turnover has not only contributed to the teacher shortage crisis, but the cost of teacher turnover has negatively impacted school districts' budgets. Employee turnover costs as much as 25% of each person's salary (Norton, 1999). Norton proposed that this percentage is similar to a school district's cost to replace teachers. The Texas Center for Educational Research (2000) found models with as much as a 200% cost associated with employee turnover. The most recent teacher turnover rate published in Academic Excellence Indicator System (AEIS) for the state of Texas was 15.5%, which

translates to a loss of more than 40,000 teachers (Texas Education Agency, 1999a). Using industry models and conservative estimates based on teacher salary at zero years experience, Texas school districts lost $329 million in 1999-2000 (Texas Center for Educational Research, 2000). According to the Texas Center for Educational Research (TCER), Texas school districts could spend between $2,000 and $4,000 per teacher lost. The cost incurred by districts would depend on the geographical, economic, and community characteristics, as well as the district's ability to pay signing bonuses and stipends for shortage areas. The TCER study showed that teacher turnover did cost school districts money. Therefore, teacher turnover resulted in a high cost to the state, as well. These funds could be used to benefit Texas students and teachers in other ways. If teacher turnover can be reduced, the money saved by school districts can be used to reduce existing budgets or add money to other areas of these budgets. High teacher turnover rates not only contribute to the teacher shortage problem but also to the growing financial problems of Texas school districts. If teacher turnover can be reduced significantly, then school districts will be able to staff their classrooms and save money in the process.

In addition to the cost to replace teachers, administrative time tied to tasks associated with teacher turnover could otherwise be dedicated to activities that support teaching and learning in Texas schools. Student performance can also be negatively impacted by teacher turnover, especially in districts with consistently high turnover rates. Policymakers and district administrators must evaluate how teachers can be supported and retained or the students are the ones who will ultimately suffer.

## Statement of the Problem

As stated in the introduction of the study, a teacher shortage does exist. The National Education Agency (2000) projected that America will need 2 million new teachers in the next decade. Experts predict that half of the teachers who will be in public school classrooms 10 years from today have not yet been hired. Nationwide, some 2.4 million teachers will be needed in the next 11 years because of teacher turnover and student enrollment growth (National Center for Education Statistics, 1999). According to the Texas State Board of Education Certification, school districts in Texas had to hire teachers to fill over 63,000 vacancies in 1999 (Texas Center for Educational Research, 2000).

In addition to student growth, other factors are contributors to the teacher shortage problem. The number of teachers retiring and the lack of college students entering or staying in the teaching profession have contributed to the teacher shortage problem currently facing public education. Several studies revealed that bright college graduates are less likely to enter the teaching profession, and that even if they do, they leave in a short period of time (Schlechty & Vance, 1983). Schlechty and Vance stated that there is also evidence to indicate that those teachers who are the most academically talented leave in the greatest numbers. Therefore, certification programs catering to the more academically talented may create additional concerns about retention rates. This phenomenon causes concerns not only about the teacher shortage but also about the quality of the teaching force as well.

The student population of Texas continues to grow at a rapid, and many Texas teachers are nearing retirement age pace (Texas Center for Educational Research, 2000).

Student enrollment is increasing statewide. In order for Texas school districts to meet the demand for teachers in the future, teacher turnover must be addressed. Teacher turnover should be analyzed for trends, patterns, and predictors. The results of the analysis can provide policy makers and school district administrators data to use in forecasting, predicting, and preventing teacher turnover. The results of a study on the factors that influence teacher turnover may provide information needed to develop strategies to recruit and retain quality teachers. The reduction of teacher turnover could positively influence teacher shortages in Texas school districts.

## Definition of Terms

The terms used in this study are listed in alphabetical order below:

Academic Excellence Indicator System (AEIS) is the accountability mechanism used in Texas to rate school district effectiveness. The origins of AEIS began in 1984. The Texas Legislature, for the first time since its origin, sought to emphasize student achievement as the basis for accountability (Texas Education Agency, 1999a). In that year, House Bill 72 called for a system of accountability that is based primarily on student performance. The AEIS report is produced by the Texas Education Agency (TEA) through the Division of Performance Reporting, Office of Policy Planning and Research. Data reported includes Texas Assessment of Academic Skills (TAAS) scores, revenue, expenditures, student demographics, and staff make-up. These reports also provide extensive information on school and district staff, finances, programs, and demographics.

Accountability Ratings refer to the district and campus ratings assigned by the 1999 accountability system. Districts and campuses are evaluated on performance

on the TAAS, dropout rate, and attendance rate (Texas Education Agency, 1999a). In 1999, districts received a rating of exemplary, recognized, academically acceptable, academically unacceptable, or unacceptable. Districts may be rated as unacceptable in need of a Special Accreditation Investigation (SAI), for reasons other than student performance. A district's accountability rating is based on the cumulative TAAS scores for all students tested in the district. Only test-takers who were enrolled in the district as of the last Friday in the previous October are included. This means a student who moved into the district a week before the TAAS was given would not be included in the performance rating for that district or campus. However, the results for students who move from school to school within the same district are used for accountability purposes. The test results go to the last school where the student was tested. The accreditation status also includes attendance and dropout rate data. The public views district accreditation status or accountability rating as the most widely used descriptor of school district effectiveness (Texas Education Agency, 1999b).

Average Teacher Salary is the total salary of teachers divided by the total full-time equivalent (FTE) count of teachers in the district. The total salary amount is pay for regular duties only. Supplemental pay for coaching, band and orchestra assignments, club sponsorships, and others are excluded (Texas Education Agency, 1999b).

Average Years Experience of Teachers is the weighted averages obtained by multiplying each district's FTE count by years of experience (Texas Education

Agency, 1999c). These amounts are summed for all teachers and divided by the total teacher count. Average years of experience refers to the total number of completed years of professional experience for the individual. Adjustments are made so that teachers with zero years of experience are appropriately weighted in the formula.

Charter Schools refers to the 61 open-enrollment schools granted a charter by the State Board of Education and in operation by the fall of the 1998-1999 school year. Open-enrollment charters can operate in a facility of a commercial or non-profit entity or a school district.

District Community Types are classified on a scale ranging from major urban to rural. Factors such as size, growth rates, student economic status, and proximity to urban areas are used to determine the appropriate group. All the charters are grouped together as one community type. The community types (Texas Education Agency, 1999c) are:

> Independent Town refers to the largest school districts in counties with populations of 25,000 to 100,000.
>
> Major Suburban are other school districts in and around the major urban areas. Generally speaking, major suburban districts are contiguous to major urban districts. If the suburban district is not contiguous, it must have a student population that is at least 15% of the size of the district designated as major urban. In some cases, other size threshold criteria may apply.

Major Urban districts are the largest school districts in the state that serve the six metropolitan areas of Houston, Dallas, San Antonio, Fort Worth, Austin, and El Paso. Major urban districts are the districts with the greatest membership in counties with populations of 650,000 or more, and more than 35% of the students are identified as economically disadvantaged.

Non-Metro Stable are school districts that are not in any of the above categories yet have a number of students in membership that exceeds the state median.

Non-Metro: Fast Growing school districts are those districts not in any of the above categories and that exhibit a five-year growth rate of at least 20 %. These districts must have at least 300 students in membership.

Other Central City Suburban are school districts in and around the other large, but not major, Texas cities. Generally speaking, other central city suburban districts are contiguous to other central city districts. If the suburban district is not contiguous, it must have a student population that is at least 15% of the size of the district designated as central city. In some cases, other size threshold criteria may apply.

Other Central City are the major school districts in other large Texas cities. Other central city districts are the largest districts in counties with populations between 100,000 and 650,000 and are not contiguous to any major urban districts.

Rural school districts are those districts that do not meet the criteria for placement into any of the above categories. Either these districts have a

growth rate less than 20% and the number of students in membership is between 300 and the state median, or the number of students in membership is less than 300.

District Enrollment Groupings in Texas, school districts are grouped by the size of enrollment. Districts are grouped by size into nine categories based on the number of students in membership in the district on the last Friday in October. It does not include students who are served by the district but who are not in membership (Texas Education Agency, 1999c).

Enrollment Groupings:

Under 500
500 to 999
1,000 to 1,599
1,600 to 2,999
3,000 to 4,999
5,000 to 9,999
10,000 to 24,999
25,000 to 49,999
50,000 and Over

Economically Disadvantaged is the percentage of students who are coded as eligible for free or reduced-price lunch or eligible for other public assistance, divided by the total number of students (Texas Education Agency, 1999c).

Number of Students Per Teacher is the total number of students divided by the total teacher FTE count (Texas Education Agency, 1999c). This number is the total number teachers assigned to a campus who are designated as instructional support to students either through direct or indirect contact with students. It does not include district instructional personnel not assigned to a specific campus.

Percent Budgeted Instructional is the percentage of total expenditure budgeted for instruction in the district. Instructional expenditures include all activities dealing directly with the interaction between teachers and students. This includes instruction aided with computers and expenditures for juvenile justice alternative education programs (Texas Education Agency, 1999c).

Percent Of Teachers With Advanced Degrees is the FTE count of teachers with a masters or doctorate degree expressed as a percent of the total teacher FTE count (Texas Education Agency, 1999c).

Public Education Information Management System (PEIMS) is the system used in Texas to capture data from every school district and campus in Texas (Texas Education Agency, 1999b).

Regional Education Service Center is divided into 20 geographic regions (Texas Education Agency, 1999c). An Education Service Center (ESC) serves each region. The 20 Regional Education Service Centers provide a variety of services to school districts both within and outside their defined geographic boundaries. Differences exist among the ESCs in terms of the number and characteristics of their member districts.

Teacher Turnover Rate is the total FTE count of teachers not employed in the district in the fall of 1998-1999 who were employed as teachers in the district in the fall of 1997-1998, divided by the total teacher FTE count for the fall of 1997-1998 (Texas Education Agency, 1999c). The Texas Education Agency compares the social security numbers of reported teachers from the two semesters to

develop this information. Personnel who remain employed in the district but not as teachers are counted as teacher turnover.

Teachers With Five or Fewer Years Of Experience is the FTE count of teachers with zero through five years of total professional experience expressed as a percentage of the total teacher FTE count. Total years of professional experience include experience earned in another Texas school district or in another state (Texas Education Agency, 1999c).

Texas Education Agency (TEA) is the administrative unit for primary and secondary public education in Texas. TEA (1999a) is comprised of the commissioner of education and the agency staff.

Total Instructional Expenditures Per Pupil is the budgeted amount of instructional expenditures divided by total students (Texas Education Agency, 1999c).

Total Per Pupil Expenditures are budgeted expenditures divided by the total number of students in the district or school (Texas Education Agency, 1999c).

Total Revenue Per Pupil is the total revenue divided by the total number of students (Texas Education Agency, 1999c). The district's total revenue that it can generate is divided by the number of students enrolled in the district.

## Limitations and Delimitations

Past studies on teacher turnover have addressed mainly the notion of attrition. Attrition has been defined as teachers leaving the teaching profession completely. For this study, teacher turnover included both teacher attrition and turnover. The term teacher turnover was used primarily in this study.

Factors such as gender, race/ethnicity, age, years of experience, salary, test scores, school size, community types, and student characteristics have been studied in the past regarding their influence on teacher turnover. Many of the studies are over three years old. The Texas Education Agency (1995) addressed teacher turnover in a policy research document entitled “Retention, Mobility, and Attrition”. The research of TEA addressed some of the issues related to teacher turnover and did make recommendations to reduce teacher turnover in Texas. The state of Texas collects and annually publishes data concerning teacher turnover rates for each district and for the entire state.

For this study, the primary data source was the Texas Academic Excellence Indicator System (Texas Education Agency, 1999a) and Snapshot ’99 (Texas Education Agency, 1999c). The population studied included all 1,042 Texas school districts and 61 charter schools. AEIS was used to determine school district accreditation status or accountability rating for each Texas school district. Snapshot ’99 was used to collect information on the predictor variables. This study only addressed district data and not individual school or campus data. Data were used from 1998-1999 AEIS report and Snapshot ‘99. The data was for only one school year, 1998-1999. The accuracy of data was dependent on each school districts adherence to the criteria set by the Texas Education Agency. Data for the study were calculated using the mean data for all districts and charter schools in the study. However, some data calculated in the study may not match state averages, because state data was based on the total data for the state and not averages of district averages. Specific interpretations of teacher turnover rates and selected variables used in the study may not be comparable to other states that do not report data in the format used by the Texas Education Agency.

The data collected for the study were quantitative. The study did not include personal surveys of teachers who have left the profession or changed districts. The data concerned only Texas school districts. Teacher attrition was included when the term teacher turnover was used. The primary focus of the study was teacher turnover in Texas school districts. The accuracy of the teacher turnover data was dependent on the accuracy of data reported by each school district.

## Purpose of the Study

The purpose of the study was to identify factors reported in the Academic Excellence Indicator System (Texas Education Agency, 1999a) that influenced teacher turnover rates in Texas Public Schools in 1998-1999. The information gained from the study could assist school officials in the adoption of policies and programs to reduce teacher turnover in Texas. By reducing teacher turnover, the teacher shortage problem could be impacted in a positive manner.

## Significance of the Problem

As stated in the introduction of the study, a teacher shortage does exist. The National Education Agency projects that America will need 2 million new teachers in the next decade, and experts predict that half the teachers who will be in public school classrooms 10 years from today have not been hired. Nationwide, some 2.4 million teachers will be needed in the next 11 years because of teacher turnover and student enrollment growth (United States Department of Education, 1999. According to the Texas State Board of Education Certification, school districts in Texas had to hire teachers to fill over 63,000 vacancies in 1999 (Texas Center for Educational Research, 2000).

In addition to student growth and teacher retirement, other factors are contributing to the teacher shortage problem. The number of college students entering the education field is significantly deteriorating. In the United States Department of Education's Baccalaureate and Beyond Study (Boser, 2000), researchers surveyed 10,080 students who had completed bachelor's degrees in 1992-1993 and conducted a follow-up of those same students in 1993-1994 and 1996-1997. The data indicated that nearly on one out of five students, about 19%, who graduate in 1992-1993 and starting teaching in public schools by 1993-1994 had left the classroom by 1996-1997.

## Research Questions

The study investigated the following research questions:

1. Is there a significant correlation between teacher salary and teacher turnover rates?
2. What variables influence teacher turnover?
3. Is there a correlation between a district's accountability rating and its teacher turnover rate?
4. Does the size of a district make a difference in teacher turnover rates?
5. Does the type of district make a difference in teacher turnover rates?
6. How do the Regional Education Service Centers compare to each other and with the state average in respect to teacher turnover?

## Organization of the Dissertation

This dissertation is organized into five chapters. Chapter 1 provides an introduction, statement of the problem, definition of terms, limitations-delimitations, significance of the problem, research questions, and purpose of the study. Chapter 2 is a

review of the relevant literature. Chapter 3 explains the materials and methods used in the research. Chapter 4 includes the presentation of the results with an analysis of the data. Chapter 5 provides the conclusions of the study and recommendations for further studies.

# CHAPTER 2

# LITERATURE SURVEY

The survey of the related literature focuses on factors that have been acknowledged in the past as having some influence on teacher turnover. The literature supplies the initial data needed to support the need for a quantitative study of the factors that influence teacher turnover in Texas. Chapter 2 is divided into the following sections: overview of the literature, teacher salary, advanced degrees, teacher experience, number of students per teacher and class size, economically disadvantaged students, working conditions, funding/budget and summary.

## Overview of the Literature

The turnover of teachers in the public schools has been an issue of ongoing concern in education for many years. Books and reports on teacher turnover date back to the early 1950s. In fact, during the 1950s, it was reported that there was a 17 % turnover rate among public school teachers (Dworkin, 1987). The rates reported in the 1960s and 1970s were lower but still significant. The turnover rates during the 1990s have been between 15 and 20 % in almost every part of the United States (National Education Agency, 2000).

Over the years, trends in teacher turnover have been influenced by many factors. These include changing demographics, changes in the labor market, modifications to public policy, and political and social considerations (Texas Education Agency, 1995). High rates of teacher turnover disrupt program continuity and planning, hinder student

learning, and increase school districts' expenditures on recruiting and hiring. Teacher turnover is a critical issue for public school officials and school administrators.

To analyze the issue of teacher turnover, identifying and interpreting the complexities and nuances of teacher turnover become important. According to Boe et al. (1993), teacher attrition is a component of teacher turnover (i.e., changes in teacher status from year to year). Teacher turnover may include teachers who exit the profession, and also include teachers who change assignments (i.e., classroom to central office or administration) or school districts. The rates of turnover often depend on this definition. Many studies focus on teacher attrition, which can be defined as those teachers leaving the profession completely, whereas teacher turnover is defined as a teacher who does not return to the same district in a teaching capacity in the next calendar year (Texas Education Agency, 1999a). The vocabulary term used throughout the literature review is teacher turnover, which includes teacher attrition.

Teacher turnover was the number one issue contributing to the demand for additional teachers in the United States (Author unknown, 1995). Research since the 1970s and early 1980s showed teacher turnover to be a problem. Charters (1970), Mark and Anderson (1978), and Murnane (1981a) recorded that 25 % of all teachers leave teaching within a few years. Murnane noted that in the early l970s there was a .33 probability that a first year teacher would leave teaching compared to the late 1960s, in which the study predicted the leave rate to be .16 probability in the first three years. Mark and Anderson (1985) noted in their study of teacher survival rates in St. Louis that proportions of entering cohorts of teachers decrease over time. According to Heyns' (1988) report on the follow up of the National Longitudinal Study of 1972, of all

beginning teachers who enter the profession, 40 to 50 % will leave the profession during the first seven years of their careers. The excess of two-thirds of those will do so in the first four years of teaching (Huling-Austin, 1986).

The National Commission on Teaching and America's Future (1996) estimated that of 600 students who entered a large four-year teacher education program early in their college years, only 180 completed the program and only about 72 actually were placed in teaching jobs. Of these, only about 30 or 40 were in the profession several years later. Boser's (2000) indicated that national data had an overall attrition rate of about 75 % along the pipeline from beginning of undergraduate teacher education through about the third year of their teacher education program. About 60 % of college students who start out in undergraduate teacher education programs complete them. Of these, about 60 % enter teaching in the next year; of these, only about 80 % stay for more than three years in the teaching profession.

Henry (1986) found the reason beginning teachers leave the teaching field is their inability to cope with teaching problems. In addition, many new teachers find that they are unprepared for the reality of the classroom. Discipline, difficulties with parents, and lack of sufficient or appropriate teaching materials are among the problems experienced by beginning teachers. In addition, beginning teachers are often given the most difficult teaching assignments. Once they leave the university setting, novice teachers often receive little or no support and find their teacher education programs did not prepare them for the realities of teaching. Page, Page, and Million (1983) identified a relationship between beginning teachers' self-assessment of the quality of their preparation programs

and their plans to stay in teaching. University graduates who are satisfied with their teacher preparation programs are more likely to stay in teaching.

One reason so many new teachers leave teaching is that the teaching profession has been slow to develop a systematic way to induct beginners gradually into the complexities of a job that demands hundreds of management decisions every day. Terms, like intern and trainee, are used in other professions to identify a beginner who has received training in the profession and who earns a stipend by participation in limited experiences under expert supervision (Shulman & Colbert, 1989). In the teaching profession, these terms are often used differently. Interns and trainees have full teaching responsibilities without prior professional training. They must also attend classes in their spare time and often have limited expert supervision. If the profession wants to retain new teachers, particularly those teaching in inner-city schools, it must introduce them to the profession compassionately and in ways that engender self-esteem, competence, collegiality, and professional stature.

Another possible factor involved in the higher turnover rate for beginning teachers is the initial level of commitment to the teaching profession. Some prospective teachers enter the profession with a positive attraction for teaching and plan to make it a long-term career. Others enter the profession with the intent of staying only a few years and plan to quit working altogether or to use the skills gained from their education to pursue interests in other fields (Yee, 1990).

According to Kirby and Grissmer (1993), the human capital theory may offer a viewpoint on teacher turnover. Teacher turnover tends to be higher during the early part of a teaching career because the teacher accumulates less specific human capital

(knowledge specific to the occupation that is non-transferable). The fundamental tenet of this theory is that individuals or households make occupational choices by systematic assessments of the likely net monetary and nonmonetary benefits from different occupations and systematic decisions throughout their careers to enter, stay, or leave an occupation. The monetary benefits are income in that profession, promotion opportunities, and value of benefits. The nonmonetary benefits include working conditions, support of peers and superiors, compatibility of working hours, and schedules with family needs. In this theory, individuals choose to enter occupations or change occupations to maximize the net returns while taking into account both monetary and nonmonetary benefits. In this model, the individual weighs costs and benefits of staying or leaving the occupation. The theory assumes that the longer an individual stays in a profession, he or she accumulates occupation-specific human capital, which translates into wage premiums that are available as long as the individual works within that occupation. Traditional teacher salary models reward teachers monetarily for years of experience or how long they have been in the profession. A typical teacher salary schedule pays a set salary by the number years teaching experience and the level of education obtained such as a masters or doctorate. Other types of capital also influence the likelihood of staying or leaving a profession. Examples of such capital are home ownership, knowledge of summer employment opportunities, seniority status in the system, and investment in retirement.

In conclusion, the greater the accumulation of specific human capital, the lower the probability of attrition. Therefore, attrition and turnover are more likely to occur early in a person's career. Teacher turnover tends to diminish later in the career because more

specific human capital exists. Since teacher salary schedules increase with each year of service or experience, teachers become invested in the system. As a teacher's salary increases due to their experience, they build more human capital for each year of service.

Research by the United States Department of Education (1997) indicated factors such as teacher age, sex, and race/ethnicity influenced teacher attrition and turnover. The research completed by the center also identified teacher marital status and family circumstances as a factor in teacher turnover. Teacher qualifications, teaching assignments, and school characteristics were also identified by the center as predictors of teacher turnover. The results of the research revealed two general conclusions. First, no single predictor variable alone showed the potential to decrease teacher turnover. Secondly, a combination of predictors had a greater potential to influence teacher turnover than any one single predictor variable. The center's recommendations were to hire more experienced teachers between the ages of 39 to 55 who have dependent children over the age of five. These teachers should be placed in full-time assignments, for which they are fully certified and paid high salary.

Norton and Kelly (1997) found that teachers left the profession or changed districts for a number of reasons. Many left the profession for other careers that had the potential for higher salary or for positions in another district, which paid more salary. Additional reasons why teachers left teaching included problems and frustration with the variety of administrative routines and accompanying paperwork, concerns about the evaluation of student performance and school grading practices, problems relating to student behavior and handling student discipline, and concerns over relationships with peers and administrative personnel. Workplace conditions were found to be key factors in

teacher job satisfaction (United States Department of Education, 1997). The data collected by the United States Department of Education suggested that the greater the job satisfaction, the lower the turnover rate is among the teaching profession.

Boser (2000) found the reasons for teacher turnover could be traced to the following factors: teachers who did not participate in an induction year program were twice as likely to leave the classroom (20 %) as those who participated (11 %) and teachers who reported dissatisfaction with student discipline and the school environment were twice as likely to leave the classroom (22 %) as those not dissatisfied (11 %). The research addressed the lack of teacher training (pre-service, induction) and not assigning mentors to assist beginning teachers as factors that contributed to teacher turnover.

In Texas the State Board for Educator Certification (SBEC) applied for and received a grant from the United States Department of Education (USDE). The TxBESS, Texas Beginning Educator Support System (Texas Center for Educational Research, 2000) was funded by this 12 million dollar grant for three years. Elements of TxBESS included training for new teachers and their mentors, effective mentor relationships, and implementation of a new instrument, Beginning Teacher Activity Profile in Texas (BTAPT). The support structure for TxBESS is provided through regions in Texas called Education Service Centers (ESC). Each ESC provides information to the local districts it services on how to obtain the funds designated for TxBESS. The desired outcome of TxBESS is support for new teachers, which should help reduce teacher turnover in Texas.

## Teacher salary

Almost all public and about two-thirds of private teachers in the United States and in most parts of the World are compensated on a fixed salary schedule (United States

Department of Education, 1997). Every nation studied in the American Federation of Teachers (AFT) international salary survey based teacher pay on a lock-step schedule depending primarily on years of experience (Nelson and O'Brien, 1993). France, Australia, and England offer a few pay flexibilities, but are tied closely to a national salary schedule. In all the nations studied, teacher experience figured prominently in the salary schedule, with years of post secondary education or the grade level taught frequently influencing salary levels. The reason salary was initially singled out by educational reformers in the United States was that it represented the most visible component of teacher compensation, and as such, the most amenable to comparison and change. Moreover, salary was a component of compensation over which school policymakers at the local level have considerable control.

Teacher compensation in the United States is unique compared to other countries in the world (Nelson and O'Brien, 1993). The public school sector in the United States is highly decentralized. There are approximately 14,700 local school districts across the 50 states, ranging from 1,042 school districts in Texas to only district in Hawaii. Thus, Hawaii is the only state to function as a single school unit. Although local school districts are responsible to their respective state education departments, local school districts have their own governing boards. Among the responsibilities maintained at the local level is the task of determining teacher salary, whether done unilaterally or through collective negotiations with the teachers' associations. One consequence of local control is that teacher salary can vary markedly both across and within states. Consequently, local school districts in Texas find themselves competing with one another, as well as with other occupations, for the services of the most talented individuals available.

A perennial problem faced by public school teachers has always been inadequate salary as compared to other professionals with the same level of education. A premise fundamental to the major critiques of American public education released during the 1980s was that the quality of a school district's educational program was directly related to the quality of its teacher workforce (Boyer, 1983; Carnegie, 1986; Goodlad, 1983; Holmes Group, 1986; National Commission on Excellence in Education, 1983). These reports were unanimous in recommending that school systems across the United States substantially increase teacher salary if they are to: (a) recruit the services of more academically able individuals, (b) encourage teachers to remain in the profession, and (c) engage teachers' regular participation in the school workplace. The Carnegie Task Force (Carnegie Forum, 1986) noted that higher teacher pay was essential to keeping quality people in the teaching profession.

Though the use of monetary incentives to influence the labor market for teachers could be supported theoretically by economic models of supply and demand, there is little empirical support for the underlying assumption that money is a primary motivator for teachers. In fact, the literature on career behaviors of teachers offers more support for the notion that teachers' decisions are influenced to a greater extent by the profession's nonpecuniary benefits than by its material ones (Chapman & Hutcheson, 1982; Johnson, 1984; Lortie, 1975). Attempting to reconcile these conflicting perspectives, Goodlad (1983) contended that teachers often begin their careers willing to forego high salary in anticipation of teaching's intrinsic rewards -- rewards such as the opportunity to work with children, and to provide a vital service to society. Should the attainment of these

rewards be frustrated over time, then salary becomes a more significant determinant of teacher behavior and a critical factor in teacher turnover.

According to the 1987-1988 Teacher Follow-up Survey, 4.5 % of public school teachers stated salary as a main reason for leaving the profession. In the private schools, 9.1 % of private school teachers stated salary as a main reason for leaving the profession (Bobbitt, Faupel, and Burns, 1991). Theobald (1990) noted from his study that salary was positively related to decisions to continue teaching. According to Theobald, previous research suggested that salary provided a reason for teachers to change careers. In Bloland and Selby's (1980) review of the literature, salary appeared to be an important factor in the career change of male educators but not female educators.

Teachers leave for higher paying jobs in other professions (Bobbitt et al., 1991). Although teacher salary have improved in recent years, they remain low compared to those of other similarly educated workers. Overall, teachers in the United States earn much less than other workers with the same amount of education and experience. In 1991, a beginning teacher's salary of $19,100 ranked above those of service workers, but below those of every other occupation held by recent college graduates, including clerical workers, technicians, and laborers. It was substantially below the $30,000 or more paid to beginning computer programmers, engineers, and health professionals (Fineman-Nemser, 1996). Teachers ages 22 to 28 earned an average $7,894 less per year than other college-educated adults of the same age in 1998. The gap was three times greater for teachers 44 to 50, who earned $23,655 less than their counterparts in other occupations. The gap was highest among those with masters degrees ages 44 to 50. Teachers in that category earned $43,313 in 1998, compared with $75,824 for nonteachers -- a difference of $32,511.

From 1994 to 1998, the average salary for masters degree holders outside teaching increased 32 %, or $17,505, after adjusting for inflation, the average salary for teachers with masters degrees increased less than $200 (Wilson, 2000). According to unpublished tabulations from the U.S. Census Bureau's 1992-99, the difference in earned income for graduates with at least a bachelor degree but not teaching and graduates with a bachelor degree who were teaching was $14,314. The income for graduates with a bachelor degree who were not teaching was $49,362, compared to an income of $35,048 for graduates with a bachelor degree who were teaching. In Texas, the difference between the income for graduates with at least a bachelor who were not teaching and the income for graduates with at least a bachelor degree who were teaching was $20,488. The income for college graduates with at least a bachelor degree but who were not teaching was $55,828, while the income was $35,340 for graduates with at least a bachelor degree who were teaching.

An interesting note related to salary is that discrepancies in teacher salary across districts and states may partially account for teacher turnover as teachers move from one district to another seeking a higher salary (Texas Education Agency, 1999). There are some large inequalities across districts in teacher salary. In 1999, the lowest average teacher salary in Texas was in Coupland ISD with an average teacher salary of $24,626. The highest average teacher salary, $44, 922, was in Rameriz Consolidated School District. The state average teacher salary for Texas was $32,579.

Teacher salary also varies greatly among states. For example, salary in 1996-1997 ranged from $27,072 in South Dakota to $51,181 in Connecticut. The average beginning salary ranged from $19,820 in South Dakota to $35,502 in Alaska. The national average teacher salary was $38,436, while the national average beginning teacher salary was

$25,012 (Schneider and Nelson 1998). The average teacher salary increases reported in 1996-1997 and 1997-1998 were among the smallest in the 40 years of data reported by the American Federation of Teachers. States in the New England, Mideast and Great Lakes regions reported the highest salary. States in the Southwest and Southeast regions reported the lowest salary. Even within a single labor market, there was often a margin of difference in teacher salary based on the wealth and spending choices of the various districts. Typically, teachers in affluent suburban districts earned more than those in central cities and rural communities within the same area. These variations contributed to a surplus of qualified teachers in some locations and a shortage in others. These variations also influenced teacher turnover, especially among new teachers. Those teachers who had higher salary tended to stay in teaching longer than those with lower salary (Fineman-Nemser, 1996).

Given the inherent difficulty of accurately assessing teaching performance, Richard Murnane (1981a) argued that merit pay and other pay-for-performance concepts would require higher teacher pay to offset the greater risk borne by individual teachers. Some experimentation with pay-for-performance already exists. According to 1987-88 SASS survey (United States Department of Education, 1999), 9.2 % of public school teachers received additional pay for mentor or master teacher duties, 2.5 % received extra pay for teaching in a shortage area, and 16.3 % earned extra pay for career ladder programs. Only 2.5 % of teachers received bonuses for individual merit, and 2.9 % earned bonuses for schoolwide performance. Private school teachers were no more likely to receive pay incentives than their public school counterparts except that 4.6 % received individual merit pay bonuses and 4.2 % earned schoolwide bonuses.

A nationwide study by the United States Department of Education (1996) found the relationship between teacher salary and teacher turnover to be statistically significant and was typical of other teacher salary and teacher turnover studies. Teacher salary was determined to have the strongest relationship with teacher turnover, more than any other variable studied. According to Darling-Hammond (1994), teacher salary plays a significant role in teachers' decisions to leave teaching. Teachers with higher salary stay in education longer than those with lower salary. Many states are raising teacher salary to retain their veteran, master teachers, (Olson, 2000) and school districts have raised their salary schedules to reduce teacher turnover. According to an article in the Houston Chronicle (Markley, 1997), Aldine ISD significantly reduced their teacher turnover rate by increasing teacher salary. Nadine Kujawa, Aldine's deputy superintendent over personnel, stated salary and working conditions represented the top two reasons why teachers chose to stay in the district. Aldine substantially increased its salary schedule in 1995, and teacher turnover rate dropped from 14.2 % to 10 %. "The past two years … certainly [have] made a difference," (Markley, 1997, p.20).

Twenty-four states and about 85 districts provide extra money for teachers who have earned national board certification (Schneider and Nelson, 1998). Thirteen states give cash awards to successful schools, although only about half allow the money to be used for staff bonuses, and most incentives are small, piecemeal efforts that served relatively few comers. A handful of states have created clearinghouses to coordinate their recruitment efforts, and only Massachusetts has created a permanent endowment fund -- $60 million -- to support its incentives. However, few of the incentives are aimed at areas

where teachers are needed most in specific subjects, and in hard-to-staff schools or districts.

## Advanced Degrees

In Bloland and Selby's (1980) review of earlier literature on teacher turnover, educational attainment had little relationship with teacher mobility. Their conclusions agreed partially with the more recent research of Marso and Pigge (1995), which found that teachers who attended a two-year county teachers college first, before attending a four-year university was unrelated to pursuing a degree to teach (Marso and Pigge, 1995). However, teachers who completed graduate work or obtained a master's degree continued teaching longer than teachers without a masters degree. One interpretation of Marso and Pigge's research suggested that the "professional" level of training in education produced a greater commitment to teaching, which resulted in a larger proportion of teachers staying in the profession.

In the study "Texas Teacher Retention, Mobility, and Attrition" by the Texas Education Agency (1995), the higher the level of education a teacher obtained, the higher the turnover rate. For the years 1988-1989 to 1993-1994, teachers with doctorate degrees had a turnover rate of 14.5 %, compared to only a 7.5 % turnover rate for teachers with a bachelors degree. However, this may be attributed to the fact that teachers who earn a doctorate degree often are promoted to non-teaching positions such as administrators or staff developers. In addition, teachers who obtained a doctorate degree often chose to teach at the university level.

## Teacher Experience

According to the United States Department of Education (1996), teachers with more experience are less likely to leave the profession. Other researchers such as Bobbitt, Faupel, & Burns (1991) found similar results at both the national and state level. In the Texas Education Agency's (1995) study "Texas Teacher Retention, Mobility, and Attrition," teachers with over 10 years of teaching had a lower attrition rate than teachers with less than 10 years experience. Teachers with 10 to 19 years experience had the lowest attrition rate at 5.2 %. Teachers with 0 to 5 years teaching had the highest teacher turnover rate at 19 %. Teachers with 25 or more years had the second highest attrition rate at 12.2 %. This difference was most likely due to retirement. Theobald (1990) found that decisions to continue teaching positively related to experience. School districts with a high number of 0 to 5 year experienced teachers were more likely to have a high teacher turnover rate.

## Number of Students per Teacher and Class Size

In 1992, the United States had an average primary (i.e., elementary school) class size of 24 but a pupil-teacher ratio of 19.3 (United States Department of Education, 1993). Specific class size ratios and pupil to teacher ratios are often confused. The pupil-teacher ratio is the sum of all students divided by the sum of all teachers. This differs from class size due to variations in teaching loads, teaching assignments, the number of classes per student, and other factors. In 1988, the Carnegie Forum on Education and Economy found that 16 % of United States teachers had classes with more than 30 students and 20 % had fewer than 20 students. Primary teachers in Japan had classes of about 30 students. However since students took about six classes and teachers taught

about four classes, the pupil-teacher ratio of 21.6 was only two students larger than the United States figure of 19.3. United States primary teachers had smaller classes than teachers in Japan, Spain, and Ireland, but their classes were similar in size to those in England and the Netherlands. Teachers in other economically advanced nations had smaller classes while teachers in Japan had larger classes. Teachers in Japan also spent less time in the classroom than their American counterparts. A considerable amount of their work week was devoted to planning and preparing for teaching. Most European teachers also spent less time in the classroom and more time preparing for teaching. In nations that reported data at the secondary level, United States class size averaged 25.6 student to teacher ratio, but United States teachers taught more classes, about five per week, of which 3.8 were different subject matter areas (United States Department, 1993a). Class size was larger in Japan, Finland, Spain, Austria, and France at the upper secondary level, but teachers in each of these nations taught fewer classes than in the United States. Japan, Germany, and the Netherlands had larger classes at the lower secondary level. Class sizes for elementary teachers of about 24 remained about the same since 1975, after falling from 29 students in 1961. The pupil-teacher ratio in elementary schools, however, fell from 28.4 in 1960 to 22.7 by 1975. Unlike actual class size, pupil-teacher ratio continued to decrease to the 19.3 student level in 1992. One reason actual class size remained constant for two decades while the pupil-teacher ratio continued to decline was the growing number of resource and specialized teachers who were not assigned to self-contained classrooms, especially in special education (National Education Association, (1992). The relatively high class size of United States teachers was partly counterbalanced by instructional teacher aides. About 10 % of teachers had

their own aide. Another 20 % shared an instructional aide. The largest numbers of teachers with aides were most often special education teachers.

Some of the literature reviewed indicated that class size might have a bearing on teacher turnover. Theobald (1990) found teacher turnover to be positively correlated with a larger teacher-student ratio. The data to analyze class size and pupil-teacher ratios as a factor in teacher turnover are available in Texas. In Texas, AEIS reports the average class size by subject area and Snapshot reports the average students per teacher (Texas Education Agency, 1999a; Texas Education Agency, 1999c).

## Economically Disadvantaged Students

Outside of the family, the most powerful influence on children is the quality of teaching they experience, which is especially true for poor children. Thus, ensuring adequate numbers of qualified teachers is at the crux of effective schooling. However, paradoxically, teacher turnover rates are highest at schools that serve large numbers of low-income children. Hawley (as cited in Ehara, 2000) noted that research shows a direct correlation between the percentage of low-income student enrollment and teacher turnover. The more poor children who attend a given school, the higher that school's turnover rate will be. Vacancies then are filled by new teachers who often experience failure and leave, thus continuing the revolving-door cycle. The literature indicates that student poverty is associated with teacher turnover. Schools with over 50 % of students receiving free or reduced price lunches have a teacher turnover rate 10 % higher than schools with lower proportions of such students.

The research reviewed was limited on the relationship between teacher turnover rates and the percentage of economically disadvantaged students. The majority of the

research associated with economically disadvantaged students concerned the relationship to test scores and student academic achievement with a student economic status. Little research was found on teacher turnover and economical disadvantaged students.

## Working Conditions

The literature surveyed indicated that other factors contribute to teacher turnover. Graham (1985) believed that unreasonable burdens and too little time to prepare lessons drive more people from the teaching profession than do low salary. The suggestions offered by Graham to reduce teacher turnover centered primarily around working conditions. Reducing class size, providing clerical help, reducing non-teaching activities, giving every teacher a student assistant, seeking help from parents, and providing monthly non-teaching work days could significantly reduce turnover rates for teachers.

Litt and Turk (1985) surveyed high school teachers to identify sources of stress and dissatisfaction that might influence teachers to leave teaching. The results suggested the role teachers perceive for themselves and the school climate, particularly the relationship with administrators, may be extremely important in predicting job stress. Teachers spend most of their time moving about the classroom helping children learn. This fast-paced and stimulating environment, however, can also be stressful and demanding. Teachers spend much of their workday isolated from other adults, unable to take unscheduled restroom or coffee breaks. Many children are disruptive, and some teachers work in potentially violent environments.

The size of the school makes a big difference in improving teachers' perception of influence on student achievement (Litt & Turk, 1985). Teachers in rural districts and central city teachers registered the same opinion in regards to the size of a school. The

research suggested the larger the size of the school, the less positive the working conditions and the higher the teacher turnover rate.

## Funding and Budgets

Funding and budgets are somewhat related to the teacher shortage problem. The American Federation of Teachers surveyed personnel officers in the school districts serving the nation's 200 largest school districts in 1998 (Schneider & Nelson, 1998). Eleven percent indicated lack of local funding as a reason for the teacher shortage. Another 5 % indicated lack of state funding contributed to the teacher shortage. Together, local and state funding equaled 16 % of the total budget for school districts. A lack of state funding has limited school districts' ability to adequately attract and compensate teachers. The data in AEIS and Snapshot reported several areas of funding, budgets, and expenditures that could be used for analysis with teacher turnover (Texas Education Agency, 1999a; Texas Education Agency, 1999c).

## Summary

The literature reviewed indicated a some correlation between teacher salary and teacher turnover. In fact, several studies clearly identified salary as the number one predictor of teacher turnover. The literature surveyed revealed other factors such as class size, demographics, district enrollment, and geographical region of the district might have some correlation with teacher turnover. However, no research was found that addressed the subject of school district accountability ratings and the relationship with teacher turnover rates.

# CHAPTER 3

## MATERIALS AND METHODS

As stated in Chapter 2, the literature reviewed indicates a correlation exists between teacher salary and teacher turnover. In addition, the literature reviewed indicates that other factors such as class size, demographics, district enrollment, and geographical region may have some correlation with teacher turnover. However, no research was found correlating district accountability with teacher turnover.

The purpose of this study was to identify factors reported in the Academic Excellence Indicator System (AEIS) that influenced teacher turnover rates in Texas Public Schools in 1998-1999 (Texas Education Agency, 1999a). Chapter 3 provides an explanation of the materials and methods used for the study. The chapter is divide into the following five sections: research hypotheses, data collected, variables, statistical procedures, and analysis of data.

### Research Hypotheses

The following hypotheses were tested in the study.

1. Is there a significant correlation between teacher salary and teacher turnover rates?

   H1. There is no significant correlation between teacher salary and teacher turnover rates.

2. What variables influence teacher turnover?

H2. The variables selected for analysis did not show a significant relationship with teacher turnover rates.

3. Is there a correlation between a district's accountability rating and its teacher turnover rate?

   H3. There is no correlation between a district's accountability rating and its teacher turnover rate.

4. Does the size of a district make a difference in teacher turnover rates?

   H4. The size of a district makes no difference in its teacher turnover rate.

5. Does the type of district make a difference in teacher turnover rates?

   H5. The type of district makes no difference in its teacher turnover rate.

6. How do the Regional Education Service Centers compare to each other and with the state average in respect to teacher turnover?

   H6. There is little or no difference in teacher turnover rates between Regional Educational Service Centers and the state.

## Data Collected

The study population included 1,042 Texas school districts and 61 charter schools. The study used data reported in the 1998-1999 AEIS report and Snapshot '99, annual publications by the Texas Education Agency. AEIS reports data for each school district and campus in the state. Snapshot reports a broad range of information in a consistent format, focusing only on district data and not individual campuses. In addition, Snapshot provides information organized by size of district enrollment, district community type, and Regional Service Centers (Texas Education Agency, 1999a; Texas

Education Agency, 1999c). Data using districts only (excluding charter schools) were also used in this study. The data set was downloaded from the Texas Education Agency (TEA) website directly into a Microsoft Excel file for data calculation and analysis.

## Variables

Table 1 displays the data labels used for the criterion variable and the predictor variables in the research. The criterion variable, teacher turnover rate (TTR), and the predictor variables chosen for analysis were derived from AEIS (Texas Education Agency, 1999a) and Snapshot (Texas Education Agency, 1999c) reports. Teacher turnover rates are stated in percentages. The data formats of the predictor variables are percentages (%), dollar amounts ($), and numbers (#).

Table 1
Criterion Variable and Predictor Variables

| Variable Types | Symbol |
|---|---|
| Criterion | |
| Teacher turnover rate | % TTR |
| Predictor Variables | |
| Average Teacher Salary | $ATS |
| Average Years Experience of Teachers | #AYE |
| Teachers with Five or fewer years of experience | %T5F |
| Percent of teachers with advanced degrees | %TAD |
| Number of students per Teacher | #NSPT |
| Economically Disadvantaged | %ED |
| Per Pupil Expenditures | $PPE |
| Total Revenue per pupil | $TRPP |
| Percent budgeted instructional | %PBI |
| Total Instructional Expenditures per pupil | $TIEPP |
| Accountability Rating | AR |

## Statistical Procedures

The data captured for this dissertation were analyzed using descriptive statistics, correlational methods, and regression tools of research. Descriptive statistics on the

criterion variable and the predictor variables were compiled and analyzed. In addition, descriptive statistics were compiled by the categories of district size (enrollment), district community type, and Regional Education Service Center areas. The descriptive statistics used were mean, standard deviation, range, sample variance, and confidence level.

A Pearson correlation was run for each predictor variable with the criterion variable time (Gall, Borg, & Gall, 1996). The Pearson correlation, also known as the linear or product-moment correlation, is a parametric test to measure the linear relationship of the variables. The degree of association is expressed by the correlation coefficient, labeled r. Correlation determines the degree of association between two variables where X is the predictor and Y is the criterion variable. A scatterplot of the observations generally helps to visualize whether the variables are correlated. If the observations tend to flare out or narrow, it may suggest that the variance over the population or sample is not constant. The correlation coefficient, a value between +1 and -1, expresses the degree of association between X, the predictor variable, and Y, the criterion variable, as follows:

1. Near zero or zero: No correlation exists between X and Y. The variables are independent and do not influence or affect each other.
2. Positive value: A positive correlation exists between X and Y. Higher values of X tend to result in higher values of Y; lower values in X tend to result in lower values of Y.
3. 1: Perfect positive correlation exists between X and Y. Higher values in X always result in higher values in Y.
4. Negative value: Negative correlation exists between X and Y. Higher values

of X tend to result in lower values of Y.

5. -1: Perfect negative correlation exists between X and Y. Higher values in X always result in lower values in Y.

Simple linear regression and multiple regression methods were run for each predictor variable with the criterion variable. Regression tools allow for prediction of a future event or outcome based upon variables measured at an earlier point in time (Gall, Borg, & Gall, 1996). Prediction studies provide three types of information to the researcher: (a) the extent to which a criterion behavior pattern can be predicted, (b) data for developing a theory about the criterion behavior pattern, and (c) evidence about the predictive validity of the test or tests that were correlated with the criterion behavior pattern. Prediction studies involve computing correlations between a complex behavior pattern (criterion variable) and variables (predictor variables) thought to be related to the criterion. Multiple regression determines the correlation between a criterion variable and combination of two or more predictor variables. Multiple linear regression analysis is a method for measuring the effects of several factors concurrently.

For this study, multiple regression tools were used to complete the correlational quantitative research. Multiple regression methods were used to predict values of the criterion variable (Y) teacher turnover rate based on the values of multiple predictor variables (X). For multiple linear regression, the effect of each predictor on the criterion variable Y was summarized as a p-value. A low p-value indicated the predictor had a significant effect on the criterion variable. For this study, the significance level was set at .0001. Commonly, the significance level is either 0.05, 0.01, or .0001 depending on the importance of not committing a Type I error. A level of .0001 is the highest significance

level. Predictors with little or no effect (high p-values) are dropped from the regression, and the regression is performed again to simplify the fitted regression line equation. A confidence interval is calculated for the data to show the upper and lower limits within which the population statistic is likely to lie.

In this study, the entire population data were used and not a sample size. The influence of each predictor variable was expressed as a partial regression coefficient with a surrounding confidence interval. The multiple regression tools of stepup, stepwise, and maximum R-square were used to determine the factors that influence teacher turnover rates in Texas school districts. In stepwise multiple regression (Gall et al., 1996) both stepup and stepdown procedures are used.

Stepup or forward multiple regression started with no variables in the regression equation. The statistical program investigated all predictor or independent variables not yet in the equation. The one with the greatest significance (lowest p-value) was then added to the equation, assuming its p-value was less than the predetermined .0001. The process continued until no more variables could be added or until the maximum number of variables had been reached.

Stepwise multiple regression tools were used to analyze the predictor variables with the highest correlation. The method of stepwise multiple regression started with no variables in the regression equation and investigated all independent variables not yet in the equation. The one with the greatest significance (lowest p-value) was then added to the equation, assuming its p-value was set at less than .0001 from the parameters set up in the formula. After each addition, all variables now in the equation were reinvestigated. The variable with the least significance (highest p-value) was then removed from the

equation, assuming its p-value was higher than the predetermined p-value. The process continued until no variables could be added or removed or until the maximum number of had been reached.

The final multiple regression method used was the maximum r-squared method. The maximum r-squared method demanded significantly more calculation time than the others, but it was guaranteed to find the best one-variable solution (in the r-squared sense), then the best two-variable solution, etc. At each step, this method removed and added variables as better solutions found were found. At each step, a predictor variable was added to (+) or removed from (-) the equation. The r-squared indicated the extent to which the criterion or dependent variable could be determined by the predictor or independent variables at each step. The corrected value for r-squared included a punishment factor for each increased number of variables. When the process stopped, complete information about the regression equation was displayed. The standard error calculated was the standard error of the regression curve (compared to the observed values) measured in units of the criterion variable. For each variable in the equation, the calculated coefficient was displayed as well as a confidence interval for the coefficient. T was the quotient of the coefficient and its standard error. P indicated the significance of the given term in the equation.

Beta weights were calculated to determine the variable(s) with the highest predicator values. P-values were calculated to determine the statistical significance of each predicator variable at the .0001 level of significance. Coefficients of variations or r-squared were calculated to determine the degree of variance, which was the percentage of variance in the criterion variable that could be explained by the given equation.

It should be noted that cause and effect were not implied from the research. Correlations and relationships were developed through statistical formulas. The statistical software used in the study was Microsoft Excel 2000. Excel 2000 performed all calculations for the regression analysis, no manual elimination of variables was necessary. As stated earlier, some data used were a mean of the average of the averages of individual school districts. Snapshot reported a pure mean or average for the state, not the average of averages of the districts (Texas Education Agency, 1999c).

## Analysis of Data

Quantitative research methods were used to analyze the data. The methods used for the analysis of the data were descriptive statistics, Pearson correlation, simple linear regression, stepup multiple regression, stepwise multiple regression, and maximum r-squared. These multiple regression techniques were used to compute the correlation between the best single predictor variable and the criterion variable. In addition, predictor values, or b weights, were calculated. The criterion variable was teacher turnover rate measured by percentage. The predictor variables were average teacher salary, average years experience of teachers, teachers with five or fewer years of experience, percentage of teachers with advanced degrees, number of students per teacher, percentage of economically disadvantaged students, per pupil expenditures, total revenue per pupil, percentage budgeted instructional, total instructional expenditures per pupil, and district accountability rating. The section titled Definition of Terms, which appeared earlier in this paper defined the criterion variable and each predictor variable.

In addition, the criterion variable (teacher turnover) and the predictor variables were analyzed by district size (enrollment), district community type, and each Regional

Educational Service Center. The data for district size (enrollment) were compared with other districts grouped by size. Data for each of the district community types were compared with other district community types. The data were analyzed for each of the 20 education service centers located in regions across the state of Texas. The Regional Education Service areas data were compared to the other Regional Education Service Centers (ESC), and the state of Texas overall.

# CHAPTER 4

## RESULTS AND DISCUSSION

This chapter presents the results and discusses the findings of the research. The findings from the data analysis are grouped by each tested research hypotheses.

### Average Teacher Salary

H1. There is no significant correlation between average teacher salary and teacher turnover rates. After the analysis of the data, the hypothesis for research question number one was accepted. Statistically there was no significant correlation between average teacher salary and teacher turnover rates. The data indicated that teacher salary had some influence on teacher turnover rates but not a significant influence.

Table 2
Descriptive Statistics for Criterion Variable and Predictor Variables:
All Districts and Charter Schools

| Variable | Mean | Standard Deviation | Range | Sample Variance | Confidence Level (95.0%) | Count |
|---|---|---|---|---|---|---|
| %TTR | 16.84 | 9.57 | 100.00 | 91.59 | 0.58 | 1061 |
| $ATS | 32579.00 | 2928.17 | 29172.00 | 8574171.27 | 173.15 | 1101 |
| #AYE | 11.82 | 2.86 | 20.00 | 8.18 | 0.17 | 1103 |
| %T5F | 32.64 | 14.92 | 100.00 | 222.60 | 0.88 | 1103 |
| %TAD | 19.97 | 10.56 | 76.50 | 111.51 | 0.62 | 1103 |
| #NSPT | 12.98 | 3.35 | 42.40 | 11.24 | 0.20 | 1103 |
| %ED | 47.05 | 20.52 | 100.00 | 421.13 | 1.21 | 1103 |
| $PPE | 6034.81 | 2521.80 | 49343.00 | 6359470.95 | 148.99 | 1103 |
| $TRPP | 6586.18 | 2994.86 | 62395.00 | 8969177.83 | 177.02 | 1102 |
| %PBI | 51.87 | 6.36 | 78.00 | 40.45 | 0.38 | 1101 |
| $TIEPP | 3408.83 | 1435.05 | 35637.00 | 2059372.00 | 84.86 | 1101 |
| AR | 2.50 | 1.09 | 5.00 | 1.19 | 0.06 | 1103 |

Note: *1042 school districts and 61 charter schools.
42 charter schools reported no data for teacher turnover

Table 2 displays the descriptive statistics for average teacher salary using district and charter schools data. The mean or average of the average teacher salary was $32,579 with a standard deviation of $2,928. The data range was 29,172. A confidence level of 173.15 was calculated.

Table 3
Descriptive Statistics for Criterion Variable and Predictor Variables: Districts Only

| Variables | Mean | Standard Deviation | Range | Sample Variance | Confidence Level (95.0%) | Count |
|---|---|---|---|---|---|---|
| %TTR | 16.27 | 7.78 | 54.80 | 60.50 | 0.47 | 1042 |
| $ATS | 32660.00 | 2362.97 | 20296 | 5583623.94 | 143.71 | *1041 |
| #AYE | 11.95 | 2.27 | 17.60 | 5.13 | 0.14 | 1042 |
| %T5F | 31.95 | 11.13 | 83.30 | 123.89 | 0.68 | 1042 |
| %TAD | 19.93 | 10.10 | 76.50 | 101.96 | 0.61 | 1042 |
| #NSPT | 12.79 | 2.45 | 24.90 | 6.00 | 0.15 | 1042 |
| % ED | 47.16 | 19.33 | 100.00 | 373.53 | 1.17 | 1042 |
| $PPE | 6077.60 | 1899.73 | 28634 | 3608962.69 | 115.48 | 1042 |
| $TRPP | 6639.31 | 2293.91 | 37392 | 5262009.63 | 139.44 | 1042 |
| %PBI | 51.88 | 5.58 | 62.00 | 31.18 | 0.34 | 1042 |
| $TIEPP | 3437.43 | 883.30 | 10246 | 780212.73 | 53.69 | 1042 |
| AR | 2.42 | 0.74 | 5.00 | 0.55 | 0.05 | 1042 |

Note: *Benjamin ISD reported no data for $ATS

Using district only data (charter school data excluded), Table 3 displays the mean of the average teacher salary was $32,660 with a standard deviation of $2,362. The range was 20,296 and the confidence level was 143.71. The difference in average teacher salary between districts and charter schools and districts only was only $81. However, the sample variance was significantly less using district only data, a difference of 2,990,547.33.

Table 4 displays the results of the Pearson product-moment correlations. According to the results of the data analysis using the Pearson correlation method,

average teacher salary, had a negative correlation with teacher turnover rate. However, the Pearson correlation was quite low at -.2934.

Table 4
Pearson Correlation Criterion Variable:
Teacher Turnover Rate for Districts and Charter Schools

| Variable | Correlation coefficient- r |
|---|---|
| %TTR | 1 |
| %T5F | 0.514155591 |
| AR | 0.415884121 |
| #NSPT | 0.154021551 |
| %ED | 0.124252117 |
| $PPE | -0.0576516 |
| %PBI | -0.08380747 |
| $TRPP | -0.08432011 |
| %TAD | -0.10311309 |
| $TIEPP | -0.1315776 |
| $ATS | -0.29340622 |
| #AYE | -0.47256003 |

Note: N=1060 Only districts and charter schools that reported data

When charter schools were excluded from the analysis (Table 5), average teacher salary had a correlation of -.3084. Although higher, this correlation was still not statistically significant. Tables 4 and 5 show the Pearson correlations for each predictor variable.

Using the method of simple linear regression, the relationship between average teacher salary and teacher turnover rate should be linear. For simple linear regression, with only one predictor variable, the formula is simply $y = a + bx$. Simple linear regression uses a least-squares estimation method to minimize the vertical distance between points and the fitted regression line. As a result, imprecision or measurement error can only occur in the Y variable. The $r^2$ or r-squared statistic allows a statistical and

visual assessment of the fit of the regression line, linearity, and other assumptions of the regression. Various classes of equations may be taken into consideration. In Table 6, r is the correlation coefficient between the actual teacher turnover values and the values calculated by the given equation. High values of r (maximum = 1.0) indicate a good fit. The square of r in statistical terms is the percentage of variance in the criterion or dependent variable that can be explained by the given equation.

Table 5
Pearson Correlation Criterion Variable:
Teacher Turnover Rate for Districts Only

| Variable | Correlation coefficient- r | Cases |
|---|---|---|
| %TTR | 1 | 1042 |
| %T5F | 0.425910394 | 1042 |
| Accountability Rating | 0.203251777 | 1042 |
| % ED | 0.188315398 | 1042 |
| $PPE | 0.016513573 | 1042 |
| $TRPP | -0.00467387 | 1042 |
| $TIEPP | -0.04860917 | 1042 |
| #NSPT | -0.07330168 | 1042 |
| %PBI | -0.12459963 | 1042 |
| %TAD | -0.15377543 | 1042 |
| $ATS | -0.30843176 | 1041* |
| #AYE | -0.37460683 | 1042 |

Note. *Benjamin ISD reported no data for $ATS

In Figure 1, the scatterplot curve shows the linear relationship of the two variables, average teacher salary, and teacher turnover. The scatterplot shows a negative correlation between average teacher salary and teacher turnover rates. An assumption can be made here that a higher average teacher salary tends to result in lower teacher turnover rates, and a lower average teacher salary tends to result in higher teacher turnover rates. However, due to the low r-value, it cannot be assumed that raising teacher salary will

result in a lower teacher turnover rate. It can be predicted that a low average teacher salary can have a negative impact on teacher turnover rates. Table 6 shows the linear regression for average teacher salary and teacher turnover rates. The correlation coefficient r was 0.2934 and r-squared was 0.0860. The beta weight for the predictor variable average teacher salary was –0.0011. In order to impact the teacher turnover rate one percent, the average teacher salary would have to be raised by $986.46.

Table 6
Simple Linear Regression for Districts and Charter Schools

| | N | A | B | R | R-Square |
|---|---|---|---|---|---|
| Y = A + B*X | 1060 | 52.71870766 | -0.001101228 | 0.293406221 | 0.086087211 |

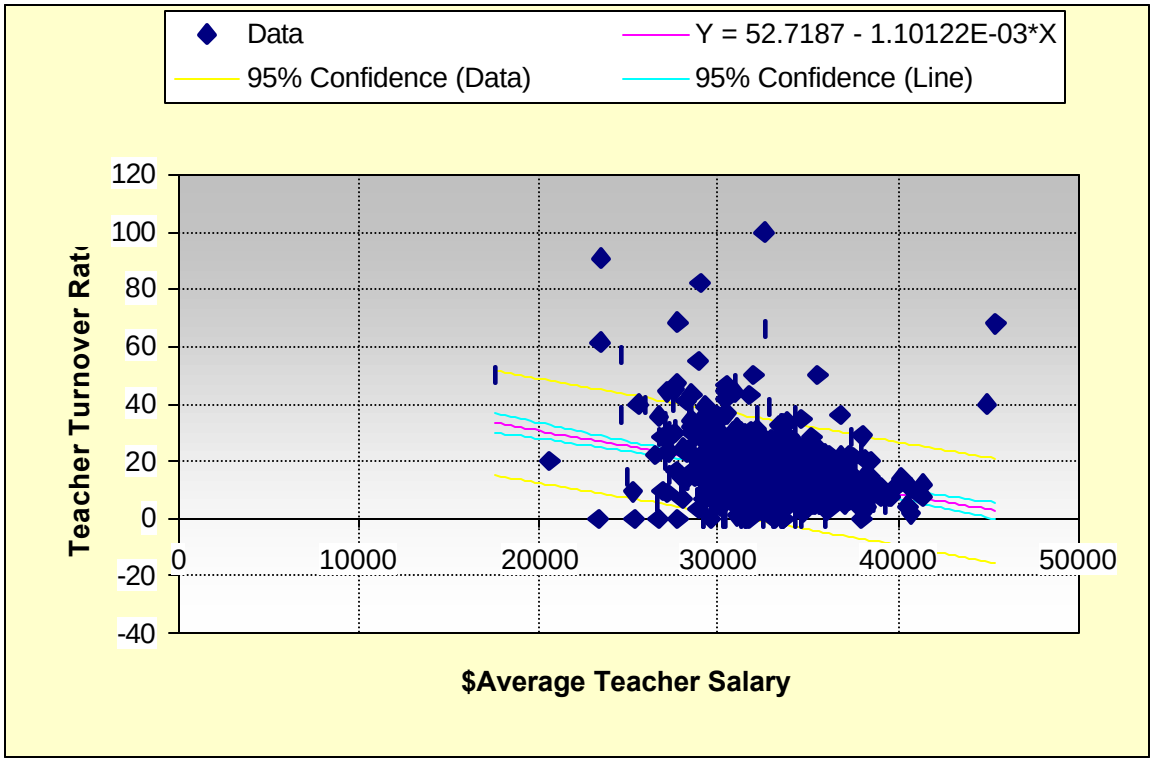



Figure 1. Scatterplot: Districts and Charter Schools

Using data for school districts only, Table 7 displays the linear regression for average teacher salary and teacher turnover rates. R was 0.3084 and r-squared was

0.0951 for district data only. The beta weight was -0.0010 for the predictor variable average teacher salary using district data only. The relationship was negative. Data indicated there was a low negative correlation (-.3084) between salary and turnover rates for Texas public school districts. The scatterplot in Figure 2 shows pictorially that little variance existed between average teacher salary and teacher turnover rates. However, the scatterplot does clearly show that the relationship between average teacher salary and teacher turnover was negative. According to the beta weight calculated, using district only data, it would take an increase of $986.46 to the average teacher salary to decrease the teacher turnover rate by one percentage point (Appendix D). In simple linear regression tests, average teacher salary did not show to be statistically significant at the .0001 level.

Table 7
Simple Linear Regression for Districts Only

| | N | A | B | R | R-Square |
|---|---|---|---|---|---|
| Y = A + B*X | 1041 | 49.36462959 | -0.001013721 | 0.308431763 | 0.095130153 |

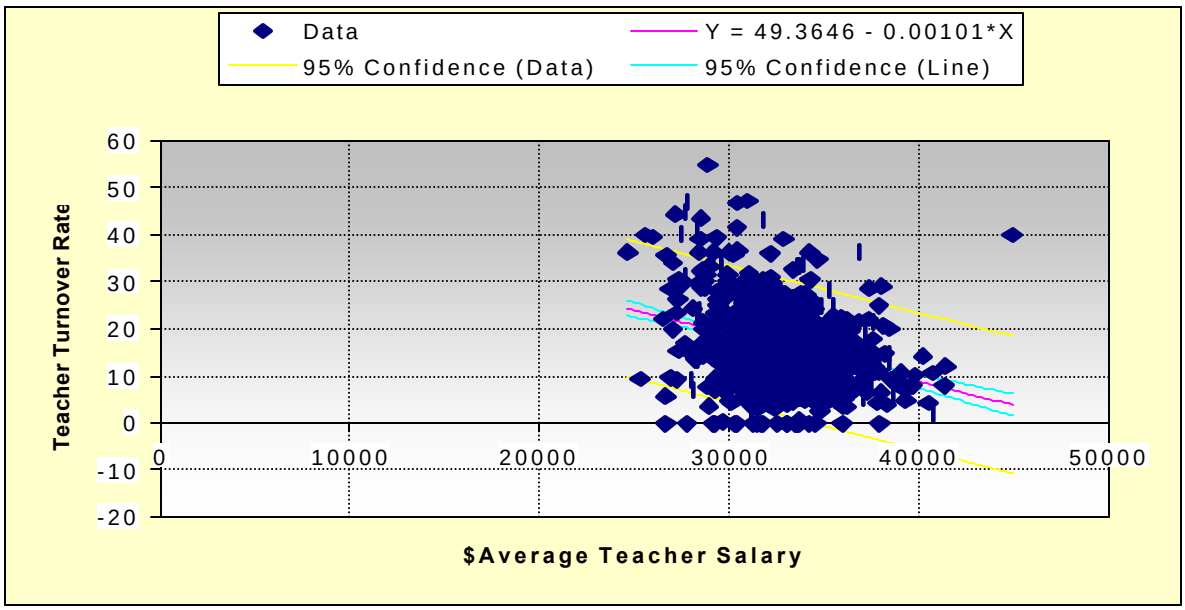



Figure 2. Scatterplot: Districts only

In and multiple regression tests (Table 8) average teacher salary did not show to be statistically significant at the .0001 level. However, when the variables percentage of teachers with five or fewer years experience (%T5F) and average years experience of teachers (#AYE) where excluded from the methods of stepup, stepwise, and maximum r-squared (Appendix C), the results showed average teacher salary was significant at the .0001 level. Without these two variables, the maximum r-squared for average teacher salary had an r-squared value of 0.0951.

## Predictor Variables

H2. The variables selected for analysis did not show a significant relationship with teacher turnover rates. According to the analysis of the statistics for predictor variables, the null hypothesis was rejected. Some of the variables selected did show a statistically significant relationship with teacher turnover rates at the .0001 level.

The descriptive statistics for the criterion variable and predictor variables shown in Table 2 included data for all districts and charters schools in the state of Texas. However, where noted some districts and many charter schools did not report data for all the variables used in the study. Table 2 showed the number of cases, mean, standard deviation, range, sample variance, and the confidence level for the variables in the study. Snapshot reported the state teacher turnover rate at 15.5 % (Texas Education Agency, 1999c). However, this study found the mean teacher turnover rate for all districts and charter schools was 16.86 with a standard deviation of 9.57. Of the total 1042 schools districts and 61 charter schools, 42 charters reported no data for teacher turnover rate. The lowest teacher turnover rate reported was 0 % and the highest was 100 %. Twenty-three districts reported 0 % teacher turnover rate. One charter school reported a 100 %

turnover rate. It should be noted that this charter school folded which accounted for the 100 % turnover rate. The next highest turnover rate reported was 90.8 %. A few districts did not report data for all the variables. Table 2 indicates the variables that were affected.

Statistical correlations were run on each predictor variable with the criterion variable using Pearson correlation coefficients. Table 4 displays the Pearson correlation coefficient r for each predictor variable using district and charter school data. The predictor variable percentage of teachers with five or fewer years experience (%T5F) had the highest Pearson correlation coefficient r of .5141. The predictor variable accountability rating (.4158) had the next highest r value at .4158. Only the predictor variables percentage of teachers with five or fewer years experience (%T5F), accountability rating (AR), number of students per teacher (#NSPT), and percentage economically disadvantaged (% ED) showed a positive Pearson correlation coefficient r. The other seven predictor variables had a negative Pearson correlation coefficient r.

Table 5 displays the Pearson correlation coefficient for each predictor variable using district only data (excluding charter school data). The percentage of teachers with five or fewer years experience (%T5F) had the highest correlation coefficient r using district only data at .4259. School district accountability rating had the second highest correlation coefficient r at .2032. Using only school district data, the predictor variables of percentage of teachers with five or fewer years experience (%T5F), accountability rating, percent economically disadvantaged (% ED), and per pupil expenditure ($PPE) showed a positive Pearson correlation coefficient r. When district only data was used, the predictor variable number of students per teacher (#NSPT) showed a negative correlation coefficient r -.0733.

Using simple linear regression, Table 8 shows that of the 11 predictor variables only two of the variables were significant at the .0001 level. The two significant predictor variables were accountability rating (AR) and percentage of teachers with five or fewer years experience (%T5F).

Table 8
Simple Linear Regression

| Term | Coefficient | SE | P | 95% CI of Coefficient | |
|---|---|---|---|---|---|
| Intercept | 7.7304 | 5.5890 | 0.1669 | -3.236 | to 18.6973 |
| AR | 2.9793 | 0.2983 | <0.0001 | 2.3939 | to 3.5647 |
| %T5F | 0.2166 | 0.0379 | <0.0001 | 0.1423 | to 0.2910 |
| $PPE | 0.0016 | 0.0004 | 0.0002 | 0.0008 | to 0.0025 |
| #AYE | -0.7126 | 0.1983 | 0.0003 | -1.1017 | to -0.3235 |
| $TRPP | -0.0005 | 0.0002 | 0.0143 | -0.0009 | to -0.0001 |
| $TIEPP | -0.0021 | 0.0009 | 0.0197 | -0.0039 | to -0.0003 |
| #NSPT | -0.2444 | 0.1271 | 0.0547 | -0.4938 | to 0.0050 |
| $ATS | 0.0001 | 0.0001 | 0.2914 | -0.0001 | to 0.0004 |
| %PBI | 0.0478 | 0.0578 | 0.4089 | -0.0657 | to 0.1613 |
| % ED | 0.0050 | 0.0129 | 0.7008 | -0.0203 | to 0.0302 |
| %TAD | 0.0002 | 0.0261 | 0.9943 | -0.0511 | to 0.0515 |

Note. TTR v. $ATS, #AYE, %T5F, %TAD, #NSPT, % ED, $PPE, $TRPP, %PBI, $TIEPP, AR.

Using stepup multiple regression analysis for districts and charter schools at the .0001 level, only two predictor variables were found to be significant, percentage of teachers with five or fewer years experience (%T5F) and accountability rating (AR). Using district only data, three predicator variables, percentage of teachers with five or fewer years experience (%T5F), accountability rating, and number of students per teacher (#NSPT), were found to be significant (Appendix B).

In the multiple regression analysis, stepwise multiple regression was used to find the predictor variables with the highest correlation. Using the stepwise regression method, only two predictor variables, percentage of teachers with five or fewer years

experience (%T5F) and accountability rating, were found to be significant at the .0001 level (Appendix B).

The predictor variables of percentage of teachers with five or fewer years experience (%T5F) and accountability rating (AR) had the most significant r-squared results and the lowest p-values using the maximum r-squared method. In the data set, districts and charter schools percentage of teachers with five or fewer years experience (%T5F) and accountability rating (AR) were the most significant predictor variables. The same was true when district only data was analyzed (Appendix C).

District Accountability Ratings

H3. There is no correlation between a district's accountability rating and its teacher turnover rate. The analysis of data indicated that teacher turnover rate was influenced by district accountability rating and that average teacher salary tended to be higher in districts with an accountability rating of exemplary or recognized. Therefore, hypothesis number three was rejected. The data indicated that a district's accountability rating did have a correlation to its teacher turnover rate.

Accountability ratings refer to the district and campus ratings assigned by the AEIS (Texas Education Agency, 1999a) accountability system. Districts and campuses are evaluated on student performance on the TAAS test, dropout rate, and attendance rate. Districts receive ratings of exemplary, recognized, academically acceptable, academically unacceptable, or unacceptable. Districts may be rated as unacceptable (Special Accreditation Investigation) for reasons other than student performance. AEIS ratings are based on the cumulative TAAS scores for all students tested in a district. For the year 1998-1999, charter schools were not given an accountability rating. Therefore,

district only data was used to address this research question. For the purposes of the study, accountability ratings were coded on a scale of one to seven. Exemplary districts were coded as a 1, recognized districts as a 2, academically acceptable as a 3, academically unacceptable as a 4, unacceptable data quality as a 5, unacceptable special accreditation investigation as a 6, and charter schools as a 7.

In Table 9, the r-value for accountability rating was 0.4159. The r-squared data was 0.1730, which translates into a variance of about 4 %. The predictor variable accountability rating had a beta weight of 4.1710. The relationship was positive as indicated by the graph in Figure 2. The data indicated a trend that districts with a rating of exemplary or recognized had a lower teacher turnover rate than districts rated other than exemplary or recognized. Figure 3, the scatterplot indicated a positive relationship between accountability rating and teacher turnover rate. This would indicate that districts with exemplary or recognized accountability rating would tend to have lower teacher turnover rates.

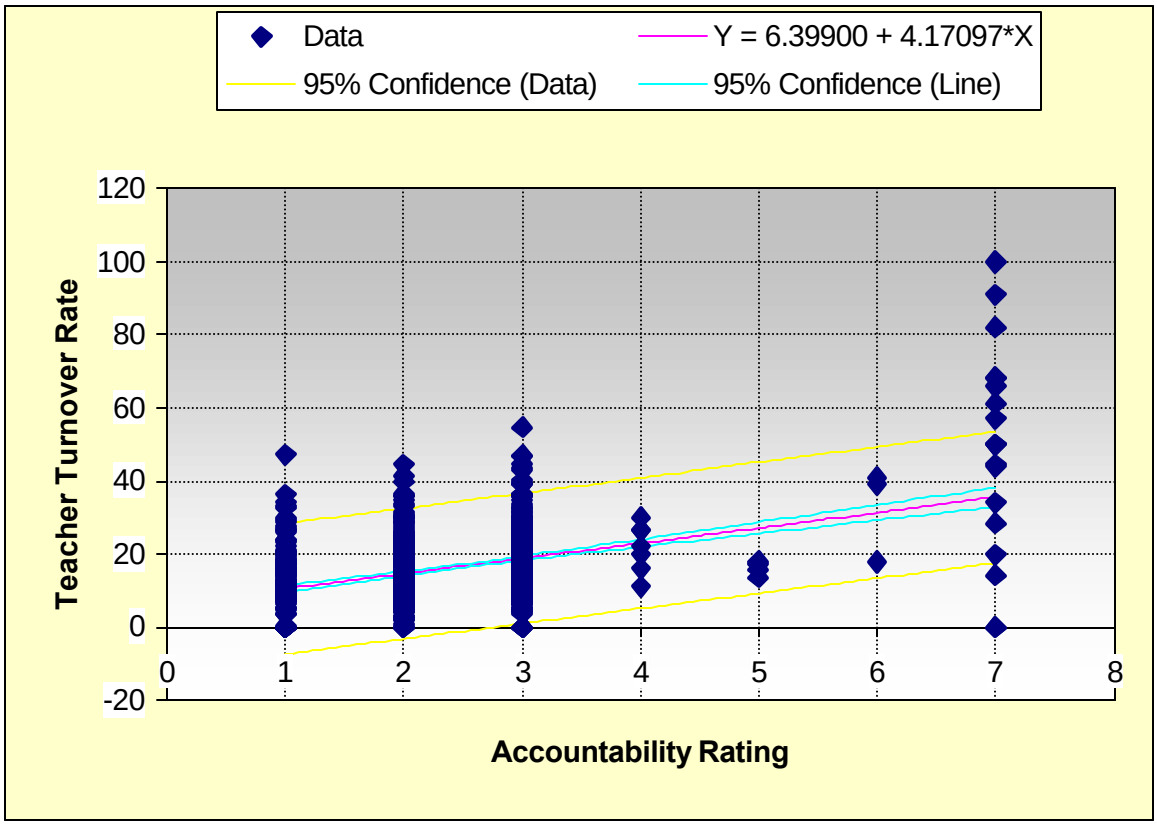
Exemplary Districts

The mean teacher turnover rate for exemplary districts was 13.92 percent. The teacher turnover rate for all districts was 16.84(calculated in the study using the mean of the averages). Exemplary districts had a lower teacher turnover by 2.92 %. There were 122 districts that achieved an exemplary rating for the 1998-99 school year. The number of exemplary districts made up 12 % of the total number of districts in the state. The mean average teacher salary for exemplary districts was $32,662. The mean average teacher salary overall was $32,578. Table 10 shows the comparison for each predictor variable for exemplary districts with the predictor variables for all the districts. The

Table 9

Simple Linear Regression Accountability Rating

| | N | A | B | R | R-Square |
|---|---|---|---|---|---|
| Y = A + B*X | 1060 | 6.399004863 | 4.170970175 | 0.415884121 | 0.172959602 |




Note. X-Variable $Accountability Rating, Y-Variable TTR
Figure. 3 Teacher Turnover Rate and Accountability Rating

teacher turnover rate for exemplary districts was 2.92 lower than all the districts together. The average teacher salary for exemplary rated districts was $84 higher than all other districts.

Recognized Districts

The data in the study also compared teacher turnover data for recognized districts with all other districts. The mean teacher turnover rate for recognized district was 15.02 %. The teacher turnover rate for all districts was 16.84. Recognized districts had a lower

teacher turnover rate by 1.82 %. The mean average teacher salary for recognized districts was $32,854. The mean average teacher salary overall was $32,579, a difference of $275.

Table 10
Comparison of Predictor Variables for Exemplary School Districts and all Districts

| | Exemplary | All Districts | |
|---|---|---|---|
| Variable | Mean | Mean | Difference |
| %TTR | 13.92 | 16.84 | -2.92 |
| $ATS | 32662 | 32578 | 84 |
| #AYE | 11.94 | 11.82 | 0.12 |
| %T5F | 29.03 | 32.64 | -3.61 |
| %TAD | 18.25 | 19.97 | -1.72 |
| #NSPT | 11.48 | 12.98 | -1.50 |
| %ED | 36.98 | 47.05 | -10.07 |
| $PPE | 7049.10 | 6034.81 | 1014.28 |
| $TRPP | 7687.46 | 6586.18 | 1101.28 |
| %PBI | 52.00 | 51.87 | 0.13 |
| $TIEPP | 3878.59 | 3408.83 | 469.76 |

The other predictor variables for recognized districts were compared to the predictor variables for all districts in Table 11. Recognized districts accounted for 37 percent of the total of all districts in the state. In comparison with exemplary districts, recognized districts had a higher teacher turnover rate by 1.1 %. However, the mean average teacher salary for recognized districts was higher than the mean average teacher salary for exemplary districts by $191. Exemplary districts had a lower percentage of economically disadvantaged students than recognized districts by 7.1 %. Exemplary districts had higher totals in the variables of per pupil expenditures ($PPE), total revenue per pupil ($TRPP), and total instructional expenditures per pupil ($TIEPP).

Academically Acceptable Districts

Districts with a rating of Academically Acceptable had a teacher turnover rate of 17.5 %. Acceptable districts had a higher teacher turnover rate than Exemplary, and

Recognized districts. Acceptable districts had a higher teacher turnover rate compared to all districts, but all districts included exemplary and recognized district data. The average

Table 11
Comparison of Predictor Variables for Recognized School Districts and all Districts

| | Recognized | All Districts | | Exemplary | |
|---|---|---|---|---|---|
| Variable | Mean | Mean | Difference | Mean | Difference |
| %TTR | 15.02 | 16.84 | -1.82 | 13.92 | -1.10 |
| $ATS | 32853.87 | 32578.65 | 275.22 | 32662.25 | -191.62 |
| #AYE | 12.10 | 11.82 | 0.28 | 11.94 | -0.16 |
| %T5F | 30.83 | 32.64 | -1.81 | 29.03 | -1.80 |
| %TAD | 20.00 | 19.97 | 0.04 | 18.25 | -1.75 |
| #NSPT | 12.74 | 12.98 | -0.24 | 11.48 | -1.26 |
| % ED | 44.08 | 47.05 | -2.97 | 36.98 | -7.10 |
| $PPE | 6107.42 | 6034.81 | 72.60 | 7049.10 | 941.68 |
| $TRPP | 6656.44 | 6586.18 | 70.26 | 7687.46 | 1031.02 |
| %PBI | 52.00 | 51.87 | 0.13 | 52.00 | 0.00 |
| $TIEPP | 3474.50 | 3408.83 | 65.67 | 3878.59 | 404.09 |

teacher salary for acceptable districts was lower than exemplary, recognized districts, and the overall state. The average teacher salary for Acceptable districts was $32,512. School districts with a rating of Acceptable made up 50 % of all districts in the state. Table 4.16 displays the data for districts rated Acceptable.

Unacceptable Districts

Districts with a rating of unacceptable only accounted for .07 % of all districts in the state of Texas. Unacceptable rated districts were higher in teacher turnover, 21.7 %, than exemplary, recognized, and acceptable districts. The average teacher salary for unacceptable districts was lower than exemplary, recognized, and acceptable districts. districts with a rating other than exemplary, recognized, acceptable, and unacceptable only made up .07 % of all districts.

## District Size

H4. The size of a district makes no difference in its teacher turnover rate.

According to the data analyzed by district size (enrollment), no significant difference was determined between the size of a district and its teacher turnover rate. The hypothesis was accepted.

Table 12 displays the descriptive statistics for district size (enrollment). As stated earlier in the definition of terms, Texas districts are grouped by size into nine categories based on the number of students in membership (the total number of students in membership in the district on the last Friday in October). Each district enrollment group and its teacher turnover rate were ranked from one being the highest and nine being the lowest. Table 12 shows that the district enrollment group with the lowest teacher turnover rate was 10,000 to 24,999. The mean teacher turnover rate for districts with this enrollment was 14.17. Districts with enrollment of 10,000 to 24,999 accounted for 49,175 of FTEs in the state. This was 19 % of the total number of FTEs in the state. FTE is define as full time equivalent teaching unit. The district enrollment group with the next lowest teacher turnover rate was 25,000 to 49,999. This enrollment group accounted for 52,963 FTEs in the state. This was 20 % of the total FTEs in the state. Together, the district enrollment groups of 10,000 to 24,999 and 25,000 to 49,999 accounted for 39 % of the total FTEs in the state.

The district enrollment group of under 500 had the highest teacher turnover rate of 17.5%. The enrollment group with the highest teacher turnover rate, districts under 500, accounted for 8,804 (3 %) of the FTEs in the state. Another interesting observation from the data in Table 12 is that the next highest teacher turnover rate of 16.5 % was in

the enrollment group of 500 to 999, which had 13,162 FTEs, or 5 % of the total FTEs in the state. Combined, the district enrollment groups of under 500 and 500 to 999 make up only 8 % of the total number of FTEs in the state of Texas. The data grouped by district enrollment indicated that districts with enrollments that were exceptionally small had higher teacher turnover rates than districts with considerably larger enrollments.

Table 12
Teacher Turnover Rate: Mean Teacher Turnover and Average Teacher Salary by District Enrollment Groups

| Enrollment Groupings | %TTR | $ATS | # of teacher FTEs | FTE % of total |
|---|---|---|---|---|
| 10,000 to 24,999 | 14.5 | 34,657 | 49175 | 19 |
| 25,000 to 49,999 | 14.6 | 35,082 | 52963 | 20 |
| 5,000 to 9,999 | 15.5 | 33,447 | 29720 | 11 |
| 1,600 to 2,999 | 15.9 | 32,924 | 19124 | 7 |
| 1,000 to 1,599 | 16.0 | 32,621 | 12105 | 5 |
| 50,000 and over | 16.1 | 36,096 | 51541 | 20 |
| 3,000 to 4,999 | 16.1 | 33,211 | 23146 | 9 |
| 500 to 999 | 16.5 | 32,618 | 13162 | 5 |
| Under 500 | 17.5 | 31,714 | 8804 | 3 |

The enrollment group with the highest average teacher salary was the 50,000 and over group at $36,096, accounting for 20 % of the total FTEs in the state of Texas. The enrollment group with the lowest average teacher salary was the under 500 group at $31,714. As stated earlier, the enrollment group under 500 had the highest teacher turnover rate at 17.5, but only accounted for 3 % of the total FTEs in the state. The district enrollment group of under 500 had the lowest average teacher salary and the highest teacher turnover rate. The enrollment group 10,000 to 24,999 had an average teacher salary of $34,657, and the lowest teacher turnover rate of 14.5 %. The enrollment group of 10,000 to 24,999 did not have the highest average teacher salary but did rank

third highest in average teacher salary. The average teacher salary of the enrollment group of 10,000 to 24,999 was $2,943 higher than the average teacher salary of the under 500 group and 3 % lower in teacher turnover rate.

### District Community Type

H5. The type of district makes no difference in its teacher turnover rate. The analysis of the data indicated that district community types made no difference its teacher turnover rate. The hypothesis was accepted.

District community types are classified on a scale ranging from major urban to rural (Texas Education Agency, 1999c). A definition of each community type was provided in Chapter 1. Factors such as size, growth rates, student economic status, and proximity to urban areas are used to determine the appropriate group. All the charters are grouped together as one community type. Table 13 shows the means for the criterion and predictor variables for each district's community type ranked from lowest teacher turnover rate to highest. The district community type with the lowest teacher turnover rate was other central city with a rate of 13.8 %. The community type of other central city was defined as the largest districts in counties with populations between 100,000 and 650,000 and was not contiguous to any major urban districts. This district community type of other central city accounted for 43,936 (17 %) of the total teacher FTEs in the state of Texas. The district community type with the highest teacher turnover rate was charter schools with a turnover rate of 55.3 %. However, charter schools accounted for only 733 FTEs in the state. The highest teacher turnover rate among community types excluding charters schools was non-metro fast growing districts with a teacher turnover rate of 16.8 %. Non-metro fast growing districts are school districts that are not in any of

the other categories and exhibit a five-year growth rate of at least 20 %. These districts must have at least 300 students in membership. Non-metro fast growing districts accounted for 7,065 FTEs in the state of Texas.

The largest district community type in regard to total FTEs was major urban. Major urban districts are districts with the greatest membership in counties with populations of 650,000 or more, and with more than 35 % of the students identified as economically disadvantaged. Major urban districts accounted for the greatest number of FTEs at 47,630, which is 18 % of the total FTEs in the state. Major urban districts had a teacher turnover rate of 16 %. Major urban districts are the largest school districts in the state that serve the six metropolitan areas of Austin, Dallas, El Paso, Fort Worth, Houston, and San Antonio. With the exception of charter schools with a teacher turnover rate of 55.3 %, the difference between district community type with the lowest teacher turnover rate and the district community type with the highest teacher turnover rate was only 3 %.

The average teacher salary for the district community type other central city was $34,035. The average teacher salary for the district community non-metro fast growing was $32, 304. The difference in the average teacher salary between the district community type with the lowest teacher turnover rate, other central city, and the district community type with the highest teacher salary excluding charter schools non-metro fast growing was $1,731. In comparing districts by both size of enrollment and community type, districts with the lowest teacher turnover rate had a higher average teacher salary compared to districts with the highest teacher turnover rate in the same category. This

data indicated that the average teacher salary in combination with district size and community type might have some influence on teacher turnover rates.

Table 13
Teacher Turnover Rate: Mean Teacher Turnover and Average Teacher Salary by District Community Type

| District Community Type | %TTR | ATS $ | # of teacher FTEs | FTE % of total |
|---|---|---|---|---|
| Other Central City | 13.8 | 34,035 | 43936 | 17 |
| Independent Town | 14.4 | 32,955 | 22252 | 9 |
| Major Suburban | 15.6 | 35,246 | 71046 | 27 |
| Other CC Suburban | 15.9 | 33,118 | 23592 | 09 |
| Major Urban | 16.0 | 36,264 | 47630 | 18 |
| Non-metro Stable | 16.1 | 33,052 | 29504 | 11 |
| Rural | 16.6 | 32,459 | 13981 | 5 |
| Non-metro Fast Growing | 16.8 | 32,304 | 7065 | 3 |
| Charters | 55.3 | 27,107 | 733 | 0 |

## Regional Education Service Center

H6. There is little or no difference in teacher turnover rates between Regional Educational Service Centers and the state. The data indicated there were some differences in the turnover rates of the Regional Educational Service Centers. In fact, the data indicated teacher turnover rates were influenced more by the region in which a district was located than by the average teacher salary in that region. This hypothesis was rejected.

As defined earlier, Texas is divided into 20 geographic regions (Texas Education Agency, 1999c); each served by an Education Service Center (ESC). The 20 Regional ESCs provide a variety of services to school districts both within and outside their defined geographic boundaries. Table 14 shows the teacher turnover rate for each ESC. The region with the lowest teacher turnover rate of 10.5 % was Region XIV in Abilene.

The districts in Region XIV accounted for 3,971 teacher FTEs, or 2% of the FTEs in the state of Texas. The next lowest teacher turnover rate was in Region VIII in Mt. Pleasant with a rate of 12.3 %. The total teacher FTEs in Region VIII were 4,175 and made up 2 % of all the FTEs in the state. Together Regions XIV and VIII made up only 4 % of the total FTEs in the state. The region with the highest teacher turnover rate of 19.6 % was Region X located in Richardson, which included Dallas. Region X with the highest teacher turnover rate of 19.6 accounted for 35,310 FTEs. Region X's total teacher FTEs were 14 % of the total teacher FTEs in the state.

The region with the highest average teacher salary was Region XX in San Antonio with an average teacher salary of $36,336. The teacher turnover rate for Region XX was 13.7 %. This turnover rate ranked sixth lowest among the regional service areas. The region with the lowest average teacher salary was Region XII in Waco with an average teacher salary of $31,795, and a teacher turnover rate of 17.9. Region XII teacher turnover rate ranked 19$^{th}$ out of the 20 regions in the state of Texas. Region XIV, which had the lowest teacher turnover rate of 10.5 %, had an average teacher salary of $32,888. Region X, which had the highest teacher turnover of 19.6 %, had an average teacher salary of $34,795. Region XIV had an average teacher salary that was $1,907 lower than the average teacher salary of Region X, but a lower teacher turnover rate of 9.1 %. However, Region X accounted for 14 % of the total FTEs in the state, and Region XIV only accounted for 2 % of the total teacher FTEs in the state. The data indicated that teacher turnover rate was influenced more by the region in which a district was located than by the average teacher salary.

Table 14
Teacher Turnover Rate: Mean Teacher Turnover and Average Teacher Salary by Regional Education Service Centers

| Regions | %TTR | $ATS | # of teacher FTE | FTE % of total |
|---|---|---|---|---|
| XIV Abilene | 10.5 | 32,888 | 3971 | 2 |
| VIII Mt. Pleasant | 12.3 | 32,336 | 4175 | 2 |
| IX Wichita Falls | 12.4 | 33,049 | 3206 | 1 |
| I Edinburg | 12.7 | 34,428 | 18670 | 7 |
| XIX El Paso | 12.8 | 33,607 | 9930 | 4 |
| XV San Angelo | 13.7 | 33,023 | 3845 | 1 |
| XX San Antonio | 13.7 | 36,336 | 21431 | 8 |
| V Beaumont | 13.8 | 33,878 | 6018 | 2 |
| XVI Amarillo | 14.0 | 32,974 | 5950 | 2 |
| VII Kilgore | 14.4 | 32,342 | 11278 | 4 |
| III Victoria | 14.5 | 33,347 | 4084 | 2 |
| XVII Lubbock | 14.7 | 33,111 | 6219 | 2 |
| XI Fort Worth | 15.4 | 34,679 | 25150 | 10 |
| XIII Austin | 15.4 | 33,695 | 17432 | 7 |
| XVIII Midland | 15.5 | 33,148 | 5689 | 2 |
| II Corpus Christi | 15.8 | 34,189 | 7453 | 3 |
| IV Houston | 15.9 | 35,598 | 51528 | 20 |
| VI Huntsville | 17.5 | 32,543 | 9174 | 4 |
| XII Waco | 17.9 | 31,795 | 9227 | 4 |
| X Richardson | 19.6 | 34,795 | 35310 | 14 |
| *State | *15.5 | *34,366 | *259740 | 100 |

Note. *Includes charter school data; Snapshot data (Texas Education Agency, 1999c)

# CHAPTER 5

## CONCLUSIONS AND RECOMMENDATIONS

Chapter 5 presents the final analysis of the dissertation in the following manner: research questions and hypotheses, conclusions and recommendations. The study focused on six research questions and hypotheses:

1. Is there a significant correlation between teacher salary and teacher turnover rates?

   H1. There is no significant correlation between teacher salary and teacher turnover rates.

2. What variables influence teacher turnover?

   H2. The variables selected for analysis did not show a significant relationship with teacher turnover rates.

3. Is there a correlation between a district's accountability rating and its teacher turnover rate?

   H3. There is no correlation between a district's accountability rating and its teacher turnover rate.

4. Does the size of district make a difference in teacher turnover rates?

   H4. The size of a district makes no difference in its teacher turnover rate.

5. Does the type of district make a difference in teacher turnover rates?

   H5. The type of district makes no difference in its teacher turnover rate.

6. How do the Regional Education Service Centers compare to each other and with the state average in respect to teacher turnover?

   H6. There is little or no difference in teacher turnover rates between Regional Educational Service Centers and the state.

## Conclusions

Is there a significant correlation between teacher salary and teacher turnover rates? It would appear on the surface that the obvious solution to reducing teacher turnover rates would be to pay higher salary. The data analyzed in this study did indicate, to a slight extent, that higher average teacher salary correlated with lower teacher turnover rates and lower average teacher salary correlated with higher teacher turnover rates. However, due to a low Pearson correlation coefficient of -.2934, it cannot be assumed that raising teacher salary would automatically result in a lower teacher turnover rate; nor can it be assumed that a low average teacher salary can have a negative impact on teacher turnover rates. When the data for average teacher salary and teacher turnover were analyzed using district only data, with no charter schools data included, the Pearson correlation coefficient was slightly higher at -.3084. The beta weight for districts and charter schools was –.0011. For districts only, the beta weight was –.0010. The beta weight calculations indicated that increasing the average teacher salary by $986.46 would decrease the teacher turnover rate by 1 %. In 1998-1999, average teacher salary increased by 2.4 % to $34,366. This was an increase of $824.80 from the 1997-1998 year to the 1998-1999 school year. Teacher turnover increased 2.2 % over the same period. It would appear that a substantial increase in teacher salary is needed to decrease the teacher turnover rate for individual school districts and the state. Additional studies and an

analysis of the data from the 1999-2000 AEIS (Texas Education Agency, 1999a) needs to be completed to see if the state mandated $3,000 increase in teacher salary for the 1999-2000 school year has had any impact on teacher turnover. Legislators, school officials, and administrators need to make decisions early in the budget process regarding teacher salary increases. If teachers are aware of the salary increase before contract renewal time, then turnover rates might be influenced positively. Teacher salary cannot be ignored if teacher turnover rates are to be improved in the future.

An additional method of data analysis used in this study was the multiple regression method of stepup or forward regression. In this method, average teacher salary did not show significant at the .0001 level. Likewise, when the multiple regression methods of stepwise and maximum r-squared were used, average teacher salary was not significant at the .0001 level. The data analysis indicated that with all the predictor variables included, average teacher salary did not have a significant influence on teacher turnover rates. However, when excluding the predictor variables percentage of teachers with five or fewer years experience (%T5F) and average years experience of teachers (#AYE) from the equation, average teacher salary was significant at the .000l level in every multiple regression method. Using the maximum r-squared method, average teacher salary had an r-squared value of .0951. Without these two predictor variables, the predictor variable average teacher salary was found to have a significant correlation with teacher turnover rate.

By excluding the predictor variables percentage of teachers with five or fewer years experience (%T5F) and average years experience of teachers (#AYE) in the data

analysis, the predictor variable percentage budgeted instruction (%PBI) was found to be significant at the .0001 level using both stepup and stepwise methods. Using maximum r-squared, %PBI had a p-value of .1153. The predictor variable accountability rating remained significant in all data analysis at the .0001 levels. The data indicated that the predictor variables percentage of teachers with five or fewer years experience (%T5F) and average years experience of teachers (#AYE) had a significant influence over teacher turnover rates when excluded from the multiple regression analysis.

What variables influence teacher turnover? The quantitative variables chosen for analysis in this study were average teacher salary, average years of experience of teachers, teachers with five or fewer years of experience, percentage of teachers with advanced degrees, number of students per teacher, percentage of economically disadvantaged students, per pupil expenditures, total revenue per pupil, percentage budgeted instructional, total instructional expenditures per pupil, and district accountability rating. These variables were labeled predictor variables in the study. A Pearson correlation coefficient was run on each predictor variable with the criterion variable teacher turnover. The predictor variables of percentage of teachers with five or fewer years of experience (%T5F) and district accountability rating (AR) had the highest Pearson correlation coefficients with .51 and .42 respectively. Using the data analysis tools of stepup and stepwise multiple regression these two predictor variables were significant at the .0001 level. Using district only data, both of these predictor variables were significant at the .0001 level as well. In addition, when district only data were used, the predictor variable of number of students per teacher was found to be significant at the .0001 level.

Using the maximum r-squared method, the percentage of teachers with five or fewer years experience had a coefficient of variation of .26, or 26 %, which was the percentage of variance in the criterion variable. Using district only data, the percentage of teachers with five or fewer years experience had a coefficient of variation of 18 %. This can be attributed to the relatively inexperienced teachers working at charter schools. District accountability rating had a coefficient of variation of 33 % and 20 % using district only data. The predictor variable number of students per teacher had a coefficient of variation of 35 % and 22 % using district only data. These three predictor variables: percent of teacher with five or fewer years experience, accountability rating, and number of students per teacher statistically had the greatest influence on teacher turnover in Texas.

Data indicated that districts with a high percentage of teachers with five or fewer years teaching experience tend to have a high teacher turnover rate. This conclusion correlated with the national data that indicated 20 % of teachers leave the profession in the first five years of teaching. It could be stated that a district with high percentage of teachers with five or fewer years experience would most likely have a high teacher turnover rate.

Is there a correlation between a district's accountability rating and its teacher turnover rate? In the analysis of the data, school districts with an accountability rating of exemplary or recognized tended to have a lower teacher turnover rate. This could be attributed to teacher satisfaction. Teachers working in districts which are experiencing success in working with students are less likely to leave the district. Other factors may contribute to teacher satisfaction that are indirectly related to increasing student

achievement. Districts with strong staff development programs may improve teacher satisfaction by providing tools to increase teacher success in working with students. In addition, the predictor variable of the number of students per teacher may also contribute to teacher moral. By working with fewer students in the classroom, teachers may feel more success in improving student learning. In combination, the three predictor variables of percent of teacher with five or fewer years experience, district accountability rating, and number of students per teacher had the greatest influence on teacher turnover rate in Texas for the year 1998-1999.

District accountability rating had a high correlation with teacher turnover rate. The predictor variable accountability rating was significant at the .0001 level in the stepup, stepwise, and maximum r-squared multiple regression methods. Districts with an exemplary rating had a mean teacher turnover rate of 13.9 %. This was well below the state mean of 15.5 % as reported in Snapshot (Texas Education Agency, 1999c). Exemplary districts had a lower teacher turnover rate than recognized, acceptable, or unacceptable rated districts. The pattern of accountability rating continued, with the recognized districts having the next lowest teacher turnover rate followed by acceptable rated districts. The data for districts' accountability rating and teacher turnover rate were found to be one of the most significant of all the variables analyzed in this study.

Does the size of district make a difference in teacher turnover rates? The district enrollment group of 10,000 to 24,999 had the lowest teacher turnover rate at 14.5 %. The district enrollment group of under 500 had the highest teacher turnover rate at 17.5 %. The district enrollment group of 25,000 to 49,999 had the second lowest teacher turnover rate at 14.6 %. The next highest teacher turnover rate was 16.5 % in the enrollment group

500 to 999. The data indicated that district enrollment does have an impact on teacher turnover rate. Districts with very low enrollment and districts with very high enrollments had the highest teacher turnover rates. Districts with enrollments between 10,000 and 49,999 had the lowest teacher turnover rate.

Does the type of district make a difference in teacher turnover rates? District community type was analyzed for teacher turnover according to the community types: major urban, major suburban, other central city, other central city suburban, independent town, non-metro fast growing, non-metro stable, rural, and charters. The district community type with the lowest teacher turnover rate was other central city with a rate of 13.8 %. The community type with the highest teacher turnover rate was charter schools with a rate of 55.3 %. Only two, of the district community types, had a lower teacher turnover rate than the state average of 15.5 %. Other central city and independent town had turnover rates of 13.8 and 14.4 % respectively. The full time teaching equivalents (FTEs) for these two community types accounted for 26 % of the total FTEs in the state. The community type that accounted for the most FTEs in the state was Major Urban at 27 %. The community type, major suburban had a teacher turnover rate of 15.6 %. The community type major urban, which accounted for 18 % of the total FTEs, had a teacher turnover rate of 16 %. From the data, no conclusions could be drawn regarding teacher turnover rate and district community type. However, teacher turnover rates did not appear to differ greatly among district community types. According to the data analyzed, the average teacher salary in the community type had a greater influence on teacher turnover rate than district community type.

How do the Regional Education Service Centers compare to each other and with the state average in respect to teacher turnover? The state average for teacher turnover rate in 1998-1999 was 15.5 %. The regional service center with the lowest teacher turnover rate was Region XIV in Abilene with a turnover rate of 10.5 %. The Regional Service Center with the highest teacher turnover rate was Region X in Richardson with a rate of 19.6 %. However, Region XIV only accounted for 2 % of the total FTEs in the state, whereas Region X accounted for 14 % of the total. The Regional Service Centers with the largest number of FTEs tended to have the highest teacher turnover rates. The Regional Service Centers with the greatest number of districts served also tended to have the highest teacher turnover rates. Likewise, the Regional Service Centers with the fewest FTEs and the fewest districts served tended to have a lower teacher turnover rate. Since teacher turnover rates are the total FTE (full time equivalent) count of teachers not employed in the district in the fall of 1998-1999 but who were employed as teachers in the district in the fall of 1997-1998, divided by the total teacher FTE count for the fall of 1997-1998, Regional Education Service Centers with a large number of districts to serve may find their turnover rate impacted by the competition between school districts for teachers (Texas Education Agency, 1999c).

The following conclusions were surmised because of the findings in this study. In order for districts to reduce teacher turnover rate, a number of factors need to be considered. The obvious answer of paying higher salary was not the case according to the findings of this study. The percentage of teachers with five or fewer years experience does have an influence on teacher turnover rates. Districts that hire a large number of teachers with less than five years of teaching experience will most likely incur higher

teacher turnover. Tracking the number of teachers hired with five or fewer years experience may prove beneficial to school district officials.

The quality of Texas schools and school districts is determined by an accountability rating. This study found that districts with an accountability rating of exemplary or recognized had lower teacher turnover rates. Districts that focus on raising test scores may improve their accountability rating and quality, and their teacher turnover rate may be reduced in the process. The predictor variable of the number of students per teacher may be attributed to teacher moral in working with fewer students in the classroom. Money budgeted to lower the number of students per teacher may be well spent. Reducing student to teacher ratios may improve teacher moral, thus resulting in a lower teacher turnover rate. In combination, the three predictor variables of percentage of teacher with five or fewer years experience, district accountability rating, and number of students per teacher had the greatest influence on teacher turnover rate in Texas for the year 1998-1999. Interestingly, these variables appeared interdependent on the success of each other. Hiring more teachers that are experienced and lowering class sizes should have a positive influence on accountability rating. Districts that are able to retain experienced teachers may be able to improve their accountability rating while reducing teacher turnover. The data analysis found that a combination of factors had the greatest influence on teacher turnover rates in Texas school districts

## Recommendations

Research and data analysis indicated that teacher turnover is a complicated problem with no single solution. District officials and administrators need to analyze the data for their own individual districts to determine the factors that influence teacher

turnover in their districts and then develop strategies to reduce teacher turnover rate. The research of this study focused on quantitative variables. Further research is needed on other possible quantitative factors that influence teacher turnover rate that were not addressed in this study. In addition, qualitative factors need study to determine the possible influence on teacher turnover. The following are recommended research studies based on the findings in this dissertation.

First, more research on effective retention programs for teachers needs to be completed. This study focused on the factors that contribute to teacher turnover. A study on districts that have successfully retained teachers would be beneficial to school officials and administrators as they develop programs to keep teachers in their districts. Induction year teacher programs, longevity incentives, and master teacher mentors need to be researched for the impact on reducing teacher turnover and attrition. Staff development programs need review for their influence on teacher retention. The Texas Beginning Educator Support System (TxBess) initiative mentioned earlier in the introduction section of this study needs to be studied closely for its influence on teacher retention. Research that can identify successful retention programs for school districts would be invaluable to school district policy makers and administrators charged with improving retention and decreasing teacher turnover.

More research on teacher age, marital status, and family circumstances as factors in teacher turnover needs to be completed. Teacher qualifications, teaching assignments, and school characteristics also need research on their influence on teacher turnover. In addition, research into the reasons teachers give for leaving a district need to be studied to better understand the complexities of teacher turnover. Research should be on-going in

that teacher turnover is dynamic and changing each year according to variables inside and outside a school district's control. Research regarding the economy and its influence on teacher turnover rate could possibly give some insight into teacher turnover rates in districts that are more metropolitan. Teacher job satisfaction and teacher stress need further research as to their impact on teacher turnover rates. Financial factors need to be studied for their influence on teacher turnover. Factors such as health benefits, personal and professional leave, staff development opportunities, and parental involvement need to be studied to determine their influence on teacher turnover rates. Recently state legislators and school board members have discussed the issue of performance pay for teachers. Research on performance pay for teachers would need to include teacher turnover rate as a major component. Other compensation concepts, such as incentive pay, should be studied for the possible impact on teacher turnover rate. The creation of programs that are intended to improve or enhance education and the quality of teachers should include teacher supply-demand and teacher turnover rate as major areas of concern when studying and implementing such programs.

An observation made from the research on teacher turnover is that charter schools had some large discrepancies in their data compared to school districts. The data regarding teacher turnover was quite high compared to traditional school districts. With no accountability rating, the ability to evaluate the effectiveness of charter schools would be difficult to quantify. Further research on the impact and the effectiveness of charter schools appears to be warranted. Legislators need research on charter schools in order to make intelligent legislative decisions.

With data reported about the shortage of teachers, it could be assumed that eventually a shortage of school administrators would also exist. According to a report in the Christian Science Monitor, 40 % of the nation's 93,000 principals will soon be retiring (Murphy, 2001). The supply and demand for administrators could be impacted by teacher turnover. In Texas, teaching experience is required for the majority of administrative positions. The Texas Education Agency (1995) estimates that 75% of Texas' 6500 principals are older than 45, and 66 % of all Texas principals are expected to retire in the next six years. These statistics would indicate that there could be a possible shortage of principals in the near future. A study would be warranted on the recruitment and development of principals and school administrators to meet the needs of pubic education in the future.

The National Commission on Teaching and America's Future (1996) called the attrition and turnover of new teachers a chronic problem for American schools. An historic turnover in the teaching profession is on the way (National Education Agency, 2000). The purpose of this study was to find quantitative factors that influence teacher turnover in Texas. If the factors that influence teacher turnover can be identified, then school officials and administrators can develop programs to prevent and reduce teacher turnover. With the insight and knowledge of the factors that influence teacher turnover, budget decisions can be made to influence teacher turnover in a positive manner. Intelligent and data driven spending will mean more resources for the improvement of student achievement.

Quality teachers are paramount to a quality education system. Free public education makes the United States the most unique country in the world. For centuries

public schools have been the vehicle for enhancing and promoting freedom and democracy in the United States. Without an adequate supply of qualified, dedicated, and committed public school teachers, the public education system of the United States would cease to be effective. Freedom and democracy are dependent on a quality public education system. An adequate supply of the best teachers is imperative to the future of the United States. Teachers must be honored, respected, and rewarded if the education system in the United States is to continue to produce a free democratic society. The inadequate supply of public school teachers cannot be ignored. If teacher turnover can be reduced, Texas and the nation will be able to meet the demand for teachers in the 21st century.

# APPENDICES

# APPENDIX A

## Simple Linear Regression

## Simple Linear Regression

**TTR v.**
**$ATS, #AYE, %T5F, %TAD, #NSPT, % ED, $PPE, $TRPP, %PBI, $TIEPP, AR**

| Term | Coefficient | SE | P | 95% CI of Coefficient | |
|---|---|---|---|---|---|
| Intercept | 7.7304 | 5.5890 | 0.1669 | -3.2366 | to 18.6973 |
| Accountability Rating | 2.9793 | 0.2983 | <0.0001 | 2.3939 | to 3.5647 |
| %T5F | 0.2166 | 0.0379 | <0.0001 | 0.1423 | to 0.2910 |
| $PPE | 0.0016 | 0.0004 | 0.0002 | 0.0008 | to 0.0025 |
| #AYE | -0.7126 | 0.1983 | 0.0003 | -1.1017 | to -0.3235 |
| $TRPP | -0.0005 | 0.0002 | 0.0143 | -0.0009 | to -0.0001 |
| $TIEPP | -0.0021 | 0.0009 | 0.0197 | -0.0039 | to -0.0003 |
| #NSPT | -0.2444 | 0.1271 | 0.0547 | -0.4938 | to 0.0050 |
| $ATS | 0.0001 | 0.0001 | 0.2914 | -0.0001 | to 0.0004 |
| %PBI | 0.0478 | 0.0578 | 0.4089 | -0.0657 | to 0.1613 |
| % ED | 0.0050 | 0.0129 | 0.7008 | -0.0203 | to 0.0302 |
| %TAD | 0.0002 | 0.0261 | 0.9943 | -0.0511 | to 0.0515 |

KEY
%TTR: Teacher Turnover Rate
$ATS: Average Teacher Salary
#AYE: Average Years Experience of Teachers
%T5F: Percentage of Teachers with five or fewer years of experience
%TAD: Percent of teachers with advanced degrees
#NSPT: Number of students per Teacher
%ED: Economically Disadvantaged Students
$PPE: Per Pupil Expenditures
$TRPP: Total Revenue per pupil
%PBI: Percent budgeted Instructional
$TIEPP: Total Instructional Expenditures per pupil
AR: Accountability Rating

# APPENDIX B

## Multiple Regression Statistics

## All Variables

**Stepup Multiple Regression < .0001 District and Charter Schools**
**X-variable: $ATS, #AYE, %T5F, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**Y-variable: TTR**

| Steps | P | R-Square | Corrected | | |
|---|---|---|---|---|---|
| %T5F (+) | 1.39504E-72 | 0.264355972 | 0.263660656 | | |
| Accountability Rating (+) | 1.95977E-22 | 0.327581197 | 0.326308882 | | |
| Summary | | | | | |
| | | R | R-Square | Std.Error | |
| Normal | 1060 | 0.572347095 | 0.327581197 | 7.849769716 | |
| Corrected | | 0.571234524 | 0.326308882 | | |
| Equation | | | | | |
| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
| Constant | -0.394403554 | 1.580989659 | 0.805690033 | -0.489522692 | 0.624573265 |
| %T5F | 0.321476612 | 0.040462972 | 0.020620384 | 15.59023436 | 1.76583E-49 |
| Accountability Rating | 2.693062418 | 0.530083997 | 0.270136741 | 9.969256357 | 1.95977E-22 |
| Analysis of variance | | | | | |
| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
| Regression | 31729.844 | 2 | 15864.922 | 257.4685035 | 0 |
| Residue | 65131.16101 | 1057 | 61.61888459 | | |
| Total | 96861.00501 | 1059 | 91.46459397 | | |

KEY
%TTR: Teacher Turnover Rate
$ATS: Average Teacher Salary
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$TRPP: Total Revenue per pupil
%PBI: Percent budgeted Instructional
$TIEPP: Total Instructional Expenditures per pupil
AR: Accountability Rating

**Stepwise Multiple Regression < .0001**
**District and Charter Schools**
**X-variable: $ATS, #AYE, %T5F, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**Y-variable: TTR**

| Steps | P | R-Square | Corrected | | |
|---|---|---|---|---|---|
| %T5F (+) | 1.39504E-72 | 0.264355972 | 0.263660656 | | |
| Accountability Rating (+) | 1.95977E-22 | 0.327581197 | 0.326308882 | | |
| Summary | | | | | |
| | | R | R-Square | Std.Error | |
| Normal | 1060 | 0.572347095 | 0.327581197 | 7.849769716 | |
| Corrected | | 0.571234524 | 0.326308882 | | |
| Equation | | | | | |
| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
| Constant | -0.394403554 | 1.580989659 | 0.805690033 | -0.489522692 | 0.624573265 |
| %T5F | 0.321476612 | 0.040462972 | 0.020620384 | 15.59023436 | 1.76583E-49 |
| Accountability Rating | 2.693062418 | 0.530083997 | 0.270136741 | 9.969256357 | 1.95977E-22 |
| Analysis of variance | | | | | |
| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
| Regression | 31729.844 | 2 | 15864.922 | 257.4685035 | 0 |
| Residue | 65131.16101 | 1057 | 61.61888459 | | |
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$TRPP: Total Revenue per pupil
%PBI: Percent budgeted Instructional
$TIEPP: Total Instructional Expenditures per pupil
AR: Accountability Rating

**Maximum R-squared District and Charter Schools**
**X-variable: $ATS, #AYE, %T5F, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**Y-variable: TTR**

| Steps | | R-Square | Corrected |
|---|---|---|---|
| %T5F (+) | ---- | 0.264355972 | 0.263660656 |
| Accountability Rating (+) | ---- | 0.327581197 | 0.326308882 |
| #AYE (+) | ---- | 0.33499052 | 0.333101289 |
| $PPE (+) | ---- | 0.340678077 | 0.338178278 |
| $TRPP (+) | ---- | 0.345201472 | 0.342095217 |
| $TIEPP (+) | ---- | 0.347060992 | 0.343340542 |
| #NSPT (+) | ---- | 0.348919468 | 0.344587183 |
| $ATS (+) | ---- | 0.349561862 | 0.344610859 |
| %PBI (+) | ---- | 0.349983381 | 0.34441181 |
| % ED (+) | ---- | 0.35007718 | 0.343881538 |
| %TAD (+) | ---- | 0.350077211 | 0.343255502 |

Summary

| | N | R | R-Square | Std.Error |
|---|---|---|---|---|
| Normal | 1060 | 0.59167323 | 0.350077211 | 7.750410881 |
| Corrected | | 0.585880109 | 0.343255502 | |

Equation

| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
|---|---|---|---|---|---|
| Constant | 7.730385068 | 10.96721814 | 5.589017172 | 1.383138543 | 0.166916977 |
| $ATS | 0.000134885 | 0.000250765 | 0.000127793 | 1.055502616 | 0.291438775 |
| #AYE | -0.712617402 | 0.389077375 | 0.198278187 | -3.594028233 | 0.000340748 |
| %T5F | 0.216638101 | 0.074385248 | 0.037907555 | 5.714905647 | 1.42991E-08 |
| %TAD | 0.000185429 | 0.051287864 | 0.02613687 | 0.007094554 | 0.994340763 |
| #NSPT | -0.244432133 | 0.249393247 | 0.127093591 | -1.923245154 | 0.054719952 |
| % ED | 0.004950496 | 0.025273785 | 0.012879804 | 0.384361145 | 0.70078877 |
| $PPE | 0.001606305 | 0.000849701 | 0.000433017 | 3.70956497 | 0.000218513 |
| $TRPP | -0.000517949 | 0.000414201 | 0.000211082 | -2.453785472 | 0.014298011 |
| %PBI | 0.047774997 | 0.11348198 | 0.057831688 | 0.826104141 | 0.408933043 |
| $TIEPP | -0.00211698 | 0.001778076 | 0.000906127 | -2.336293751 | 0.019663684 |
| Accountability Rating | 2.979333377 | 0.585419605 | 0.298336386 | 9.986490142 | 1.703E-22 |

Analysis of variance

| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
|---|---|---|---|---|---|
| Regression | 33908.83049 | 11 | 3082.620953 | 51.31811226 | 0 |
| Residue | 62952.17452 | 1048 | 60.06886882 | | |
| Total | 96861.00501 | 1059 | 91.46459397 | | |

**Stepup Multiple Regression < .0001 District only**
**X-variable: $ATS, #AYE, %T5F, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**Y-Variable: TTR**

| Steps | P | R-Square | Corrected | | |
|---|---|---|---|---|---|
| %T5F (+) | 5.07443E-48 | 0.18463701 | 0.183852252 | | |
| Accountability Rating (+) | 1.27618E-07 | 0.206272709 | 0.204743369 | | |
| #NSPT (+) | 1.107E-05 | 0.220928414 | 0.218674591 | | |
| Summary | | | | | |
| | N | R | R-Square | Std.Error | |
| Normal | 1041 | 0.470030227 | 0.220928414 | 6.864890382 | |
| Corrected | | 0.46762655 | 0.218674591 | | |
| Equation | | | | | |
| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
| Constant | 7.711526058 | 2.611007903 | 1.330598864 | 5.795530318 | 9.02919E-09 |
| %T5F | 0.287766325 | 0.037913285 | 0.019321034 | 14.89393986 | 1.3105E-45 |
| #NSPT | -0.391978149 | 0.174148138 | 0.088747841 | -4.416762628 | 1.107E-05 |
| Accountability Rating | 1.801176164 | 0.579107956 | 0.295119899 | 6.103201342 | 1.46671E-09 |
| Analysis of variance | | | | | |
| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
| Regression | 13858.62616 | 3 | 4619.542053 | 98.02383992 | 7.35529E-56 |
| Residue | 48870.4086 | 1037 | 47.12671996 | | |
| Total | 62729.03476 | 1040 | 60.31637957 | | |

KEY
%TTR: Teacher Turnover Rate
$ATS: Average Teacher Salary
#AYE: Average Years Experience of Teachers
%T5F: Percentage of Teachers with five or fewer years of experience
%TAD: Percent of teachers with advanced degrees
#NSPT: Number of students per Teacher
%ED: Economically Disadvantaged Students
$PPE: Per Pupil Expenditures
$TRPP: Total Revenue per pupil
%PBI: Percent budgeted Instructional
$TIEPP: Total Instructional Expenditures per pupil
AR: Accountability Rating

**Stepwise Multiple Regression < .0001 District only**
**X-variable: $ATS, #AYE, %T5F, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**X-variable: TTR**

| Steps | | R-Square | Corrected | | |
|---|---|---|---|---|---|
| %T5F (+) | 5.07443E-48 | 0.18463701 | 0.183852252 | | |
| Accountability Rating (+) | 1.27618E-07 | 0.206272709 | 0.204743369 | | |
| #NSPT (+) | 1.107E-05 | 0.220928414 | 0.218674591 | | |
| | | | | | |
| Summary | | | | | |
| | | R | R-Square | Std.Error | |
| normal | 1041 | 0.470030227 | 0.220928414 | 6.864890382 | |
| corrected | | 0.46762655 | 0.218674591 | | |
| | | | | | |
| Equation | | | | | |
| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
| Constant | 7.711526058 | 261% | 1.330598864 | 5.795530318 | 9.02919E-09 |
| %T5F | 0.287766325 | 0.037913285 | 0.019321034 | 14.89393986 | 1.3105E-45 |
| #NSPT | -0.391978149 | 0.174148138 | 0.088747841 | -4.416762628 | 1.107E-05 |
| Accountability Rating | 1.801176164 | 0.579107956 | 0.295119899 | 6.103201342 | 1.46671E-09 |
| | | | | | |
| Analysis of variance | | | | | |
| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
| Regression | 13858.62616 | 3 | 4619.542053 | 98.02383992 | 7.35529E-56 |
| Residue | 48870.4086 | 1037 | 47.12671996 | | |
| Total | 62729.03476 | 1040 | 60.31637957 | | |

KEY
%TTR: Teacher Turnover Rate
$ATS: Average Teacher Salary
#AYE: Average Years Experience of Teachers
%T5F: Percentage of Teachers with five or fewer years of experience
%TAD: Percent of teachers with advanced degrees
#NSPT: Number of students per Teacher
%ED: Economically Disadvantaged Students
$PPE: Per Pupil Expenditures
$TRPP: Total Revenue per pupil
%PBI: Percent budgeted Instructional
$TIEPP: Total Instructional Expenditures per pupil
AR: Accountability Rating

**Maximum R-square Districts only**
**X-variable: $ATS, #AYE, %T5F, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**Y-variable: TTR**

| Steps | | R-Square | Corrected |
|---|---|---|---|
| %T5F (+) | ---- | 0.18463701 | 0.183852252 |
| Accountability Rating (+) | ---- | 0.206272709 | 0.204743369 |
| #NSPT (+) | ---- | 0.220928414 | 0.218674591 |
| $TIEPP (+) | ---- | 0.228569107 | 0.22559061 |
| $PPE (+) | ---- | 0.240261616 | 0.236591382 |
| #AYE (+) | ---- | 0.24382758 | 0.239439732 |
| % ED (+) | ---- | 0.247007059 | 0.241904493 |
| $TRPP (+) | ---- | 0.248826622 | 0.243003573 |
| %PBI (+) | ---- | 0.249277667 | 0.24272432 |
| %TAD (+) | ---- | 0.249364222 | 0.242076496 |
| $ATS (+) | ---- | 0.249426555 | 0.241402932 |

Summary

| | N | R | R-Square | Std.Error |
|---|---|---|---|---|
| normal | 1041 | 0.499426226 | 0.249426555 | 6.764305483 |
| corrected | | 0.491327724 | 0.241402932 | |

Equation

| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
|---|---|---|---|---|---|
| Constant | 24.85242452 | 10.56214563 | 5.382587681 | 4.617188979 | 4.38124E-06 |
| $ATS | -3.87911E-05 | 0.000260388 | 0.000132697 | -0.292329058 | 0.770093974 |
| #AYE | -0.342316479 | 0.348665949 | 0.177684072 | -1.926545671 | 0.054311426 |
| %T5F | 0.202428719 | 0.067730109 | 0.034516022 | 5.864775494 | 6.05524E-09 |
| %TAD | -0.006972456 | 0.045782492 | 0.023331271 | -0.298845975 | 0.765117911 |
| #NSPT | -0.635371877 | 0.313963452 | 0.159999291 | -3.971091836 | 7.6521E-05 |
| % ED | 0.022495663 | 0.023394037 | 0.011921863 | 1.886925166 | 0.059451687 |
| $PPE | 0.001165942 | 0.000751079 | 0.000382758 | 3.046155431 | 0.00237693 |
| $TRPP | -0.000317268 | 0.000365327 | 0.000186175 | -1.704139077 | 0.088657006 |
| %PBI | -0.042708256 | 0.102308289 | 0.05213745 | -0.819147385 | 0.412892003 |
| $TIEPP | -0.002698643 | 0.001594507 | 0.000812579 | -3.32108517 | 0.000928194 |
| Accountability Rating | 1.653225924 | 0.610132332 | 0.310930268 | 5.317031157 | 1.2935E-07 |

Analysis of variance

| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
|---|---|---|---|---|---|
| Regression | 15646.28706 | 11 | 1422.389732 | 31.08652545 | 4.78985E-57 |
| Residue | 47082.7477 | 1029 | 45.75582867 | | |
| Total | 62729.03476 | 1040 | 60.31637957 | | |

# APPENDIX C

## Multiple Regression Statistics

**Multiple Regression Stepup < .0001**
**X-variable: $ATS, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**Y-Variable: TTR**

| Steps | P | R-Square | Corrected |
|---|---|---|---|
| $ATS (+) | 2.22318E-24 | 0.095130153 | 0.094259248 |
| Accountability Rating (+) | 5.56668E-11 | 0.131839095 | 0.130166338 |
| %PBI (+) | 2.00736E-05 | 0.146935576 | 0.144467695 |

Summary

| | N | R | R-Square | Std.Error |
|---|---|---|---|---|
| normal | 1041 | 0.383321766 | 0.146935576 | 7.183495755 |
| corrected | | 0.380089061 | 0.144467695 | |

Equation

| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
|---|---|---|---|---|---|
| Constant | 52.99500526 | 7.618274869 | 3.882358179 | 13.65021021 | 3.89512E-39 |
| $ATS | -0.000997158 | 0.000185219 | 9.43896E-05 | -10.56427988 | 7.57461E-25 |
| %PBI | -0.17108137 | 0.078365955 | 0.039936168 | -4.283870448 | 2.00736E-05 |
| Accountability Rating | 1.942913305 | 0.590772455 | 0.301064258 | 6.453483768 | 1.67493E-10 |

Analysis of variance

| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
|---|---|---|---|---|---|
| Regression | 9217.12687 | 3 | 3072.375623 | 59.53915021 | 1.62253E-35 |
| Residue | 53511.90788 | 1037 | 51.60261127 | | |
| Total | 62729.03476 | 1040 | 60.31637957 | | |

KEY
%TTR: Teacher Turnover Rate
$ATS: Average Teacher Salary
#AYE: Average Years Experience of Teachers
%T5F: Percentage of Teachers with five or fewer years of experience
%TAD: Percent of teachers with advanced degrees
#NSPT: Number of students per Teacher
%ED: Economically Disadvantaged Students
$PPE: Per Pupil Expenditures
$TRPP: Total Revenue per pupil
%PBI: Percent budgeted Instructional
$TIEPP: Total Instructional Expenditures per pupil
AR: Accountability Rating

**Multiple Regression Stepwise < .0001**
**X-variable: $ATS, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**Y-Variable: TTR**

| Steps | P | R-Square | Corrected | | |
|---|---|---|---|---|---|
| $ATS (+) | 2.22318E-24 | 0.095130153 | 0.094259248 | | |
| Accountability Rating (+) | 5.56668E-11 | 0.131839095 | 0.130166338 | | |
| %PBI (+) | 2.00736E-05 | 0.146935576 | 0.144467695 | | |
| | | | | | |
| Summary | | | | | |
| | N | R | R-Square | Std.Error | |
| Normal | 1041 | 0.383321766 | 0.146935576 | 7.183495755 | |
| Corrected | | 0.380089061 | 0.144467695 | | |
| | | | | | |
| Equation | | | | | |
| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
| Constant | 52.99500526 | 7.618274869 | 3.882358179 | 13.65021021 | 3.89512E-39 |
| $ATS | -0.000997158 | 0.000185219 | 9.43896E-05 | -10.56427988 | 7.57461E-25 |
| %PBI | -0.17108137 | 0.078365955 | 0.039936168 | -4.283870448 | 2.00736E-05 |
| Accountability Rating | 1.942913305 | 0.590772455 | 0.301064258 | 6.453483768 | 1.67493E-10 |
| | | | | | |
| Analysis of variance | | | | | |
| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
| Regression | 9217.12687 | 3 | 3072.375623 | 59.53915021 | 1.62253E-35 |
| Residue | 53511.90788 | 1037 | 51.60261127 | | |
| Total | 62729.03476 | 1040 | 60.31637957 | | |

KEY
%TTR: Teacher Turnover Rate
$ATS: Average Teacher Salary
#AYE: Average Years Experience of Teachers
%T5F: Percentage of Teachers with five or fewer years of experience
%TAD: Percent of teachers with advanced degrees
#NSPT: Number of students per Teacher
%ED: Economically Disadvantaged Students
$PPE: Per Pupil Expenditures
$TRPP: Total Revenue per pupil
%PBI: Percent budgeted Instructional
$TIEPP: Total Instructional Expenditures per pupil
AR: Accountability Rating

**Multiple Regression Stepwise < .0001**
**X-variable: $ATS, %TAD, #NSPT, %ED, $PPE, $TRPP, %PBI, $TIEPP, AR**
**Y-Variable: TTR**

| Steps | P | R-Square | Corrected | | |
|---|---|---|---|---|---|
| $ATS (+) | 2.22318E-24 | 0.095130153 | 0.094259248 | | |
| Accountability Rating (+) | 5.56668E-11 | 0.131839095 | 0.130166338 | | |
| %PBI (+) | 2.00736E-05 | 0.146935576 | 0.144467695 | | |
| | | | | | |
| Summary | | | | | |
| | N | R | R-Square | Std.Error | |
| Normal | 1041 | 0.383321766 | 0.146935576 | 7.183495755 | |
| Corrected | | 0.380089061 | 0.144467695 | | |
| | | | | | |
| Equation | | | | | |
| | Coefficient | 95% Conf. (±) | Std.Error | T | P |
| Constant | 52.99500526 | 7.618274869 | 3.882358179 | 13.65021021 | 3.89512E-39 |
| $ATS | -0.000997158 | 0.000185219 | 9.43896E-05 | -10.56427988 | 7.57461E-25 |
| %PBI | -0.17108137 | 0.078365955 | 0.039936168 | -4.283870448 | 2.00736E-05 |
| Accountability Rating | 1.942913305 | 0.590772455 | 0.301064258 | 6.453483768 | 1.67493E-10 |
| | | | | | |
| Analysis of variance | | | | | |
| | Sum of Squares | Degrees of Freedom | Mean Square | F | P |
| Regression | 9217.12687 | 3 | 3072.375623 | 59.53915021 | 1.62253E-35 |
| Residue | 53511.90788 | 1037 | 51.60261127 | | |
| Total | 62729.03476 | 1040 | 60.31637957 | | |

KEY
%TTR: Teacher Turnover Rate
$ATS: Average Teacher Salary
#AYE: Average Years Experience of Teachers
%T5F: Percentage of Teachers with five or fewer years of experience
%TAD: Percent of teachers with advanced degrees
#NSPT: Number of students per Teacher
%ED: Economically Disadvantaged Students
$PPE: Per Pupil Expenditures
$TRPP: Total Revenue per pupil
%PBI: Percent budgeted Instructional
$TIEPP: Total Instructional Expenditures per pupil
AR: Accountability Rating

## APPENDIX D

## Beta Weight Calculation for Average Teacher Salary

## Beta Weight Average Teacher Salary and Teacher Turnover

| INT | Beta | **Salary** | | units difference | =1/beta |
|---|---|---|---|---|---|
| 49.36463 | 0.001013721 | $34,336.00 | 84.17175 | | 986.46 |
| | | $34,470.00 | 84.30759 | -0.13584 | 1 |
| | | $34,570.00 | 84.40896 | -0.23721 | 2 |
| | | $34,670.00 | 84.51034 | -0.33858 | 3 |
| | | $34,770.00 | 84.61171 | -0.43995 | 4 |
| 16.2568 | | $34,870.00 | 84.71308 | -0.54133 | 5 |
| | | $34,970.00 | 84.81445 | -0.64270 | 6 |
| | | $35,070.00 | 84.91583 | -0.74407 | 7 |
| | | $35,170.00 | 85.01720 | -0.84544 | 8 |
| | | $35,270.00 | 85.11857 | -0.94682 | 9 |
| | | $35,370.00 | 85.21994 | -1.04819 | 10 |
| | | $33,349.54 | 83.17175 | **1.00000** | |

# REFERENCES


Author unknown (1995). The Condition of Education 1995. [On-line]. Available: http://www.ed.gov/NCES/pubs/ce/c9560a01.html.

Bloland, P. A., & Selby, T. J. (1980). Factors associated with career change among secondary school teachers: A review of the literature. Educational Research Quarterly, 5(3), 13-24.

Bobbitt, S.A., Faupel, E., & Burns, S. (1991). Characteristics of stayers, movers, and leavers: Results from the teacher follow-up survey, 1988-1989 (NCES Publication No. 91-128). Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Boe, E. E., Bobbitt, S. A., & Cook, L.H. (1993). Whither didst thou go? Retention, reassignment, migration, and attrition of special and general education teachers in national perspective. Paper presented at the Annual Convention of the Council for Exceptional Children, San Antonio, TX.

Boser, U. (2000). A picture of the teacher pipeline: Baccalaureate and beyond. Education Week XIX (18), 17.

Boyer, E. (1983). High school: A report on secondary education in America. New York: Harper & Row.

Carnegie Forum on Education and Economy. (1986). A Nation Prepared: Teachers for the 21st Century. The Report of the Task Force on Teaching as a Profession. New York: Carnegie Corporation.

Chapman, D., & Hutcheson S. (1982). Attrition from teaching careers: A discriminant analysis. American Educational Research Journal, 19(1), 93-105.

Charters, W.W. (1970). Some factors affecting teacher survival rates in school districts. American Educational Research Journal, 7(1), 1-27.

Clinton, W. J. (1997, February 4). State of union address. [Online]. http://www.law.uoknor.edu/hist/state97.html

Darling-Hammond, L. (1994). The Current Status of Teaching and Teacher Development in the United States. Paper prepared for the National Commission on Teaching and America's Future.

Dworkin, A. G. (1987). Teacher burnout in the public schools. Structural causes and consequences for children. New York: State University of New York Press.

Ehara, P. (2000). Hawley: Without teaching quality, not much matters. [Online]. Available: http://www.aasa.org/hawley.html.

Fineman-Nemser, S. (1996). The current status of teaching and teacher development in the United States. [On-line]. Available: http: www.tc.columbia.edu

Gall, M. D., Borg, W. R., & Gall, J. P.(1996) Educational research: An introduction (6th ed.). Longman Publishers USA. p. 409-441.

Goodlad, J. (1983). A place called school: Prospects for the future. St. Louis, MO: McGraw-Hill.

Graham, J. B. (1985). Serious about keeping good teachers? Help them reclaim lost teaching time. American School Board Journal, 172 (3), 35-36.

Henry, M. (1986). Strengths and needs of first year teachers. Teacher Educator, 22(2), 10-18.

Heyns, B. (1988). Educational defectors: A first look at teacher attrition in the NLS-72. Educational Researcher, 17(3), 24-32.

Hudson, S.P. (1996). "Science Teacher Supply in the United States." School Science and Mathematics, 96(3), 133-139.

Huling-Austin, L. (1986). Factors to consider in alternative certification programs: What can be learned from teacher induction research? Action in Teacher Education, 8(2), 51-58.

Johnson, S. M. (1984). Merit pay for teachers: A poor prescription for reform. Harvard Educational Review, 54(2), 175-185.

Kirby, S. N., & Grissmer, D.W. (1993). Teacher attrition: Theory, evidence, and suggested policy options. Paper presented at the World Bank/Harvard Institute for International Development Seminar on "Policies Affecting Learning Outcomes Through Impacts on Teachers" Cambridge, MA.

Litt, M. D., and Turk, D. C. (1985). Sources of stress and dissatisfaction in experienced high school teachers. Journal of Educational Research, 78, 178-185.

Lortie, D. (1975). Schoolteacher: A sociological study. Chicago: University of Chicago Press.

Mark, J., & Anderson, B. (1978). Teacher survival rates: A current look. American Educational Research Journal, 15(3), 379-382.

Mark, J., & Anderson, B. (1985). Teacher survival rates in St. Louis, 1969-1982. American Educational Research Journal, 22(3), 413-421.

Markley, M. (1997, November 17). Money talks: Teachers' salaries weigh in heavy as districts struggle to keep cream of the crop. Houston Chronicle, p. 20.

Marso, R. & Pigge, F. (1995). Characteristics associated with teacher attrition: Pre- and post-preparation teaching concerns of candidates teaching or not teaching five years after graduation. Paper presented at the Annual Meeting of the Midwestern Educational Research Association, Chicago, IL.

Maslow, A. H. (1954). Motivation and Personality. New York: Harper & Brothers.

McGuinn, J. (1957). Board presidents evaluate school problems. American School Board Journal, 10(2), p. 45.

Murnane, R.J. (1981a). Seniority rules and education productivity: Understanding the consequences of a mandate for equality. American Journal of Education, 11(2), 15-37.

Murnane, R. J. (1981b). Teacher mobility revisited. Journal of Human Resources, 16(1), 3-19.

Murphy, F. M. (2001). Growing leaders. American School Board Journal, 188(4), January, 30-32.

National Commission on Teaching and America's Future (1996). What matters most: Teaching for America's future. New York: Teachers College, Columbia University.

National Education Association (NEA). (1992). Status of the American public school teacher, 1990-91. Washington, DC: Author.

National Education Agency. (2000) Ready or not: A national teacher shortage looms. [Online]. Available: http://www.nea.org/teaching/shortage.html.

Nelson, F. H. & O'Brien, T. (1993). How U.S. Teachers Measure Up Internationally: A comparative study of teacher pay, training, and conditions of service.

Washington DC: American Federation of Teachers.

Norton, M. S. (1999). Teacher retention: Reducing costly teacher turnover. Contemporary Education 70(3), p. 52.

Norton, M. S., & Kelly, L. K. (1997). Resource allocation: Managing money and people. Larchmont, NY: Eye on Education.

Page, J., Page, F., & Million, S. (1983). Teacher education curricula: Perceptions of first-year teachers. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada.

Ponessa, J. (1996). High Teacher Attrition Grabs Attention in N.C., Education Week, 15(39), p.3.

Schlechty, P. & Vance, V. (1983). Recruitment, selection and retention: the shape of the teaching force. The Elementary School Journal, 83(4), 480-487.

Schneider, K., & Nelson, F. H. (1998). Survey and analysis of salary trends 1997. [On-line]. Available: http://www.aft.org.

Shulman, J. H., & Colbert, J. A. (1989). Cases as catalysts for cases; inducing reflection in teacher education. Action in Teacher Education, 11(1), 44-52.

Texas Center for Educational Research. (2000). The cost of teacher turnover. Austin, TX: Author

Texas Education Agency. (1995). Teacher supply, demand, and quality policy project research project: Texas teacher retention, mobility, and attrition. Austin, TX: Author.

Texas Education Agency. (1999a). Academic excellence indicator system (AEIS): 1998-99 school district profiles. Austin, TX: Author.

Texas Education Agency. (1999b). Public education information management system (PEIMS). Austin, TX: Author.

Texas Education Agency. (1999c). Snapshot '99: 1998-99 school district profiles. Austin,TX: Author.

Texas Education Code (1998). Texas school law bulletin. Austin,Tx: West Publishing.

Theobald, N. D. (1990). An examination of the influence of personal, professional, and school district characteristics on public school teacher retention. Economics of Education Review, 9(3), 241-250.

United States Department of Education. (1993a). National Center for Educational Statistics: America's Teachers: Profile of a Profession. Washington, DC: Author.

United States Department of Education. (1993b). National Center for Educational Statistics: Schools and Staffing: A Statistical Profile, 1990-91. Washington, DC: Author.

United States Department of Education (1996). National Center for Educational Statistics: Predictors of Retention, Transfer, and Attrition of Special and General Education Teachers: Data from the 1989 Teacher Followup Survey. Washington, DC: Author.

United States Department of Education. (1997). National Center for Educational Statistics: Job Satisfaction among America's Teachers: Effects of workplace conditions, background, characteristics, and teacher compensation. Washington, DC: Author.

United States Department of Education. (1999). National Center of Education Statistics: Schools and Staffing Survey (SASS), 1993-94. Washington, DC: Author.

Winters, K. (1997, April 1). National forum on preparing teachers. [On-line]. Available: http://www.ed.gov/MailingLists/EDInfo/0244.html

Yee, S.M. (1990). Careers in the classroom: When teaching is more than a job. New York: Teachers College Press